



REGULAR MEETING AGENDA

Date: 10/20/2015
Time: 7:00 p.m.
City Council Chambers
701 Laurel St., Menlo Park, CA 94025

A. Call To Order

B. Roll Call

C. Pledge of Allegiance

D. Presentations and Proclamations

- D1. Presentation of commendation to Gizela Sipos
- D2. Presentation of four Beacon Sustainability Spotlight awards

E. Commission Reports

- E1. Environmental Quality Commission Quarterly Update Report

F. Public Comment

Under "Public Comment," the public may address the City Council on any subject not listed on the agenda. Each speaker may address the City Council once under Public Comment for a limit of three minutes. Please clearly state your name and address or political jurisdiction in which you live. The City Council cannot act on items not listed on the agenda and, therefore, the City Council cannot respond to non-agenda issues brought up under Public Comment other than to provide general information.

G. Consent Calendar

- G1. Approve a sponsorship policy for Community Services Department events and programs ([Staff Report# 15-147-CC](#))
- G2. Approve removal of parking along the north side of Haven Avenue as part of the Haven Avenue Streetscape Project ([Staff Report# 15-155-CC](#))
- G3. Adopt a resolution stating the City Council's support for the concept of expanding the Menlo-Atherton Little League snack bar and storage facility adjacent to the athletic fields at Burgess Park ([Staff Report# 15-162-CC](#))
- G4. Approve minutes for the Council meetings of August 25 and October 6, 2015 ([Attachment](#))

H. Regular Business

- H1. Encourage Menlo Park residents and businesses to avoid poison rodent bait ([Staff Report# 15-161-CC](#))
- H2. Consider changes to the downtown Menlo Park parking options and time restrictions ([Staff Report# 15-160-CC](#))
- H3. Provide direction on proposed Police and Public Works antenna structure design ([Staff Report# 15-153-CC](#))
- H4. Consideration of approval of the terms of an agreement between the City of Menlo Park and the American Federation of State, County and Municipal Employees, Local 829 ([Staff Report# 15-152-CC](#))

I. Informational Items

- I1. Summary of Council comments from the October 6, 2015 meeting on the General Plan and M-2 Area zoning update ([Staff Report# 15-158-CC](#))
- I2. Update on the El Camino Real Corridor Study ([Staff Report# 15-154-CC](#))
- I3. Update on the City of Menlo Park's Climate Action Plan update and status report for 2015 ([Staff Report# 15-156-CC](#))
- I4. Update on Peninsula Clean Energy, a Community Choice Energy effort sponsored by San Mateo County ([Staff Report# 15-163-CC](#))
- I5. Initiation of a community-wide survey by Godbe Research ([Staff Report# 15-159-CC](#))
- I6. Initiation of community engagement supporting 2015-16 Capital Improvement Projects for parks ([Staff Report# 15-157-CC](#))

J. City Manager's Report

K. Councilmember Reports

L. Adjournment

Agendas are posted in accordance with Government Code Section 54954.2(a) or Section 54956. Members of the public can view electronic agendas and staff reports by accessing the City website at www.menlopark.org and can receive e-mail notification of agenda and staff report postings by subscribing to the "Notify Me" service at menlopark.org/notifyme. Agendas and staff reports may also be obtained by contacting City Clerk at 650-330-6620. (Posted: 10/15/2015)

At every Regular Meeting of the City Council, in addition to the Public Comment period where the public shall have the right to address the City Council on any matters of public interest not listed on the agenda, members of the public have the right to directly address the Commission on any item listed on the agenda at a time designated by the Chair, either before or during the City Council's consideration of the item.

At every Special Meeting of the City Council, members of the public have the right to directly address the City Council on any item listed on the agenda at a time designated by the Chair, either before or during consideration of the item.

Any writing that is distributed to a majority of the City Council by any person in connection with an agenda item is a public record (subject to any exemption under the Public Records Act) and is available for inspection at the City Clerk's Office, 701 Laurel St., Menlo Park, CA 94025 during regular business hours.

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Community Services



STAFF REPORT

City Council

Meeting Date:

10/20/2015

Staff Report Number:

15-147-CC

Consent Calendar:

Approve a Sponsorship Policy for Community Services Department Events and Programs

Recommendation

Staff recommends that City Council approve the attached, amended, Community Services Department Sponsorship Policy for Special Events and Programs.

Policy Issues

Council has established a User Fee / Cost Recovery Policy setting specific expectations for the level of cost recovery to be achieved by Community Services programs. Approval of a defined sponsorship policy will support the Department's efforts to improve the quality of community events and programs while meeting the Council's cost recovery policy targets.

Background

Sponsorships account for about \$16,000 in annual revenue to the Community Services Department, against a total budget of almost \$8 million, including monetary and other support for events such as 4th of July, Summer Concert Series, Breakfast with Santa, Egg Hunt and more. As the Department continues to improve the scope and quality of special events while keeping events free or very low cost to promote community participation, sponsorships have become a more important revenue source as well as an opportunity for community based businesses and other sponsors to become involved and give back to their home town. A sponsorship policy approved by Council will support special events such as Egg Hunt, Kite Day, and the Menlo Movie Series as well as scholarship programs in support of low-income participants, Senior Center Nutrition and Meal Program, and many more.

Council reviewed a draft of the Policy on October 6 and asked for three changes:

- Eliminating the word "partnership"
- Creating approval levels for higher amounts of funding, and
- Prohibiting use of the name "City of Menlo Park" by sponsors

The attached draft of the policy includes these changes as requested.

Analysis

Sponsorships are cash or in-kind monetary contributions or donations of products and services offered by sponsors with the clear expectation that the recipient is obliged to return something of value to the sponsor.

The value is typically recognition and publicity or advertising highlighting the contribution of the sponsor or the sponsors' name, logo, message, products or services. The sponsor usually has specific marketing objectives for the sponsorship such as the right to be the exclusive sponsor in some category of sales. The arrangement is typically formalized by a letter of agreement or contract detailing the particulars of the exchange. Sponsorships are different from donations in that donations come with no restrictions on how the money or in-kind resources are used. The attached policy addresses sponsorships, the agreements for the procurement of resources and the benefits provided in return for securing those resources. Since donations or gifts come with no restrictions or expected benefits for the donor, a policy is generally not needed for them.

The attached policy, based on models from other area communities with a more formalized sponsorship process, defines the purposes of a sponsorship policy, the procedures to be followed when establishing a sponsorship relationship with a sponsor, the limitations and restrictions on the agreement, the value of the sponsorship (including how payments will be managed, pricing tiers and insurance requirements), and the recognition and benefits the sponsors will receive for their contribution.

The Parks and Recreation Commission, at their September 23, 2015 meeting, approved this policy while suggesting staff consider adding a system for choosing among potential "named event" sponsors should competing potential sponsorships arise in the future. The City Attorney has also reviewed and approved the policy which includes several additional changes made by the Council at their October 6, 2015 meeting.

Impact on City Resources

Currently, event and activity sponsorships generate about \$16,000 annually for Community Services. It is anticipated that, with a more defined and clearly articulated policy, sponsorships will continue to grow as a revenue source. This year, \$35,000 was budgeted for sponsorships in the Council approved 2015-16 Budget.

Environmental Review

A sponsorship policy is not subject to California Environmental Quality Act requirements.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. Proposed Community Services Department Sponsorship Policy

Report prepared by:
Cherise Brandell, Community Services Director

~~PARTNERSHIP &~~ SPONSORSHIP POLICY

Community Services
701 Laurel St, Menlo Park, CA 94025
tel 650-330-2200

**Purpose**

In an effort to maximize the community's resources, it is in the best interest of the City's Community Services Department to create and enhance relationship-based [Partnership Sponsorships](#). This may be accomplished by providing local, regional, and national commercial businesses and non-profit groups a method for becoming involved with the many opportunities provided by the Community Services Department. The Department delivers quality, life-enriching programs and activities to the broadest base of the community. This translates into exceptional visibility for sponsors and supporters. The goal of this policy is to create relationships and [Partnership Sponsorships](#) with sponsors to support the financial health of the Department.

[Partnership Sponsorships](#)

[Partnership Sponsorship](#)s are cash or in-kind products and services offered by [Ssponsors](#) with the clear expectation that an obligation is created. The recipient is obliged to return something of value to the [Partner Sponsor](#). The value is typically public recognition and publicity or advertising highlighting the contribution of the [Partner Sponsor](#) and/or the [Partner's Sponsor's](#) name, logo, message, products or services. The [Partner Sponsor](#) usually has clear marketing objectives, including, but not limited to, the ability to drive sales directly based on the [Partnership Sponsorship](#), and, quite often, the right to be the exclusive sponsor in a specific category of sales. The arrangement is typically consummated by a letter of agreement or contractual arrangement detailing the particulars of the exchange. Some programs, such as the Menlo Park Summer Concert Series or Menlo Movie Series may have multiple sponsors in a specific category since these [Partner Sponsor](#)s sponsor a specific event although marketing collateral would be combined.

Donations

A donation comes with no restrictions on how the money or in-kind resources are used. This policy specifically addresses [Partnership Sponsorships](#), the agreements for the procurement of the resources, and the benefits provided in return for securing those resources. Since donations or gifts come with no restrictions or expected benefits for the donor, a policy is generally not needed.

Eligibility

[Partner Sponsor](#)s should be businesses, non-profits, or individuals promoting mutually beneficial relationships for the Community Services Department and the City of Menlo Park. All potentially sponsored programs or facilities should be reviewed in order to create synergistic working relationships regarding benefits, community contributions, knowledge, and political sensitivity. All sponsored programs should promote the goals and mission of the City of Menlo Park and the Community Services Department.

[Partnership Sponsorship](#) Contact Maintenance

The Community Services Director or designee, is responsible for maintaining an updated list of all current [Partnership Sponsorships](#), sponsored activities, and contacts related to [Partnership Sponsorships](#) in order to:

- Limit duplicated solicitations of a single entity
- Allow decisions based on the most appropriate solicitations and level of benefits offered
- Keep a current list of Department supporters and contacts
- Help provide leads for new [Partnership Sponsorships](#), if appropriate
- Ensure [Ssponsor](#) mission and values are in line with the mission and values of the Menlo Park Community Services Department
- Confirm [Ssponsorship](#) agreement(s) are adequately fulfilled

Not a Public Forum

In adopting the ~~Partnership and~~ Sponsorship Policy, it is the City of Menlo Park's declared intention and purpose to not permit any marketing [Partnership Sponsorships](#) that individually or in combination would cause any real or personal property, facilities, vehicles, or communication media owned or controlled by the City to become a public forum for the dissemination, debate or discussion of public issues.

Procedures

1. Any new [Partnership Sponsorship](#) program, event or benefit by the Department must be approved by the Director or a designee.
2. [Partnership Sponsorship](#) levels vary and are established based on the [Partner Sponsors](#)' level of exposure and fair market value.
3. [Partnership Sponsorship](#) opportunities can include donated product, in-kind services, and money to offset operating and material costs. The total sum of sponsorship funds offered for the specific event/series (monetary) and total estimated value of in-kind contributions (goods or services) will determine the sponsorship category of each [Partner Sponsor](#).
4. All [Partnership Sponsorship](#) values must be reviewed and approved by the Community Services Director or designee. All [Partner Sponsor](#)s will be provided an approved [Partner Sponsor](#) packet with approved [Partnership Sponsorship](#) benefits, levels and values.
5. All marketing materials that include [Partner Sponsor](#) logos or names (i.e. flyers, posters, t-shirts, press releases, web links, etc.) must be approved by the Director or designee.
6. All [Partnership Sponsorship](#) agreements must be signed by the Department Director or designee and use the approved agreement form.
7. All [Partnership Sponsorship](#) agreements that include logos, names, etc. on print materials require a minimum lead time of two months prior to the event or program start date. This time is needed in order to execute the agreement, receive payment and provide benefits to the [Partner Sponsor](#). All other agreements require a minimum lead time of two weeks prior to the event or program start date. Sponsorship agreements submitted after the established deadlines will not be accepted; negotiations or subsidized sponsorships will not be made.

Limitations/Restrictions

1. The Department may refuse a [Partnership Sponsorship](#) if the organization promotes a program or service that is competitive with the Department's programs and services; the organization is associated with religious, political, alcohol, tobacco, firearms, pornographic, scandalous, or "adult" themed products and services; or the [Partnership Sponsorship](#) would create a conflict of interest with City policy. The City has a reasonable interest in maintaining a position of neutrality.
2. Final approval of all [Partner Sponsor](#) provided content, graphics and layout must be given by the Director or designee.
3. The City retains full control of how a program, event or service will be delivered, managed and operated.
4. This policy is not applicable to gifts, grants or unsolicited donations in which no benefits are granted to the donor and where no business relationship exists.
5. The City may cancel a program or event (i.e. budget reduction, City Council action, weather conditions, etc.). [Partner Sponsor](#)s will be provided written notice of the cancellation and pro-rated/full refunds issued or materials will be returned.
6. The City of Menlo Park has the right to inspect a [Partner Sponsor](#) booth at any time prior to or during an event. Restrictions on what a [Partner Sponsor](#) may distribute or display at an event will be provided prior to the event. [Partner Sponsor](#)s must distribute only their own organization's marketing materials and cannot distribute materials for other organizations. All [Partner Sponsor](#)s wanting to share or give their booth to other organizations have approval of the Director or designee.
7. The City's logo or the name "City of Menlo Park" may not be used by a [Partner Sponsor](#) in any way without the permission of the Department Director or designee. If permission is granted, all materials must be reviewed and approved.
8. Distribution of or advertising in any format that is political, offensive, or issue oriented is prohibited.
9. Marketing materials provided by the [Partner Sponsor](#) should be accurate, well-organized and clearly identifiable as a commercial marketing collateral piece. Materials stating that the City of Menlo Park endorses a commercial entity are strictly prohibited.
10. All [Partnership Sponsorship](#) agreements are with the listed or defined commercial or non-profit entity. Any subsidiary or affiliate of the [Partner Sponsor](#) must either obtain permission of the City of Menlo Park to be included in the [Partnership Sponsorship](#) arrangement benefits or create a separate [Partnership Sponsorship](#) arrangement.
11. [Partner Sponsor](#)s must submit high-quality digital artwork/logo by the established deadline for each event or risk their logo not being included in marketing materials. The City will not alter [Partner Sponsor](#) logos with the exception of re-sizing. [Partner Sponsor](#) logos may not contain contact information such as numbers, e-mails, or website unless it is part of the sponsor name/brand (ie. Amazon.com, Pets.com, etc.).
12. The City will make all reasonable attempts to include the [Partner Sponsor](#)'s name/logo through the marketing and promotional activities associated with an event or program in which a [Partner Sponsor](#)'s name/logo is included or where the [Partner Sponsor](#)'s marketing materials are presented. Examples include: printed materials, t-shirts, promotional products, website content, email communication/e-blasts, advertising, newsletters, calendars, social media, banners, and on-site display booths.
13. Only one organization will be allowed a Title Sponsorship per event, program or series. Series events will be capped to one sponsor per event date where an exclusive sponsorship exists. All other sponsorship categories will remain open until their cutoff date, unless otherwise identified by staff.

[Partnership Sponsorship](#) Value

All [Partnership Sponsorship](#) values will be reviewed on an annual basis by the Department's leadership team. New events or programs that are added during the year must follow the valuation guidelines. Final [Partnership Sponsorship](#) values and corresponding benefits must be approved by the Director or designee.

[Partnership Sponsorship](#) values are established by the Community Services Department based on the estimated attendance and marketing for each event or program, or other criteria determined by the Director or designee, such as anticipated community benefit.

Payments

All [Partner Sponsor](#) payments including in-kind goods or services **must** be received prior to the event or program being delivered. Benefits may only be delivered if the payment terms of the agreement are met. Any exceptions must be approved by the Director or designee. [Partner Sponsor](#)s may pay with Visa, Mastercard, check, or cash.

[Sponsorships and donations below \\$25,000 may be approved by the Community Services Director. Sponsorships and donations between \\$25,000 and \\$56,000 must be approved by the City Manager. Any Sponsorship or donation for more than \\$56,000 must be approved by the City Council before being accepted.](#)

Special Event Pricing Tiers

Attendance	Pricing Tier	Title	Platinum	Gold	Silver	Bronze
4000+	3	\$10,000	\$7,500	\$5,000	\$2,500	\$1,000
1000-3999	2	\$7,500	\$1,000	\$750	\$500	\$250
Under 999	1	\$5,000	\$750	\$500	\$250	\$100

Current Special Event Tiers

Event / Program	Attendance	Pricing Tier
4th of July Parade & Celebration	5000	3
Summer Concert Series	3000	2
Egg Hunt	2750	2
Halloween Hoopla	2000	2
Menlo Movie Series	1250	2
Kite Day	600	1
MA PAC Programs	500	1
Breakfast with Santa	400	1

Insurance

[PartnerSponsor](#)s will be required to provide proof of insurance with the City of Menlo Park listed as an additional insured if the [PartnershipSponsorship](#) includes the following:

- Utilization of City facility, park, or equipment not in conjunction with a City sponsored event
- Any promotion or activity at a City sponsored event that goes above and beyond what is normally provided by the City (i.e. rides, games, other activities)
- As required through the approval of a permit or facility use agreement
- Certificate of Liability Insurance must include:
 - The renter's name must be listed as the one "insured."
 - The policy must not expire before the planned event date.
 - The policy must be for \$1,000,000.
 - The "description" should list the rental location, day, and event planned.
 - The City of Menlo Park at 701 Laurel Street, Menlo Park, CA 94025 must be noted as "additional insured."

Recognition & Benefits

1. [PartnershipSponsorship](#) benefits should follow the benefit tiers detailed in each event sponsorship packet.
2. All [PartnershipSponsorship](#) benefits that include complimentary services (tickets, wristbands, etc.) should not exceed 20% of the total value of the sponsorship for that individual program.
3. All [PartnerSponsor](#)s will receive a letter of appreciation and digital photos of the event or program. Summary of the event or program including attendance estimates can be provided on request
4. For events that include title sponsors or capped sponsorships (ie. Summer Concert Series and Menlo Movie Series), the previous year sponsor(s) will be granted first right of contract based on the following order:
 - Title sponsors
 - Platinum Sponsors
 - Gold Sponsors
 - Silver Sponsors
 - Bronze Sponsors

Appeal Process

The City may decline to [partnerSponsor](#) with any organization at any time. When [partnershipSponsorships](#) are declined, potential [partnerSponsor](#)s may appeal the decision to the Director of Community Services by submitting an appeal letter in writing.

Endorsement

A [PartnershipSponsorship](#), under this [PartnershipSponsorship](#) and Sponsorship Policy, shall in no way constitute an endorsement of the [partnerSponsor](#)'s organization, products, services or employees by the City of Menlo Park and / or the Community Services Department.

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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-155-CC****Consent Calendar:**

Approve Removal of Parking along the north side of Haven Avenue as Part of the Haven Avenue Streetscape Project

Recommendation

Staff recommends that the City Council approve parking removal along segments of Haven Avenue (as shown in Attachment A) to accommodate new bicycle and pedestrian facilities.

Policy Issues

The Haven Avenue Streetscape Project conforms to the objectives of multiple policy documents. This project supports the objectives of the City of Menlo Park's General Plan, Complete Streets Policy, and Comprehensive Bicycle Development Plan. Project implementation also supports goals identified within the San Mateo Countywide Bicycle and Pedestrian Plan and the City of Redwood City's General Plan.

Background

In 2013, the City, in conjunction with graduate students from Cal Poly San Luis Obispo's Department of City and Regional Planning, developed the West Haven Waterfront Plan, which envisioned Haven Avenue as a multimodal corridor surrounded by a variety of land uses. This vision for the Haven Avenue corridor was incorporated into the City's 2015-2023 Housing Element, which specifically designates the Haven Avenue corridor as a prime location for future development of higher-density housing within the City.

Per this vision, the development of 394 housing units at 3639 Haven Avenue (St. Anton Project), along with another 146 housing units at 3645 Haven Avenue (Greystar Project), is underway, with the completion of both projects expected during the spring of 2016. Part of the impact mitigation for the St. Anton Project includes developer-funded multimodal infrastructure improvements along a portion of the project corridor.

In January 2014, the City submitted a request for Measure A grant funding to the San Mateo County Transportation Authority (SMCTA) to fund multimodal improvements (comprised of on-street bicycle lanes, sidewalks, and other enhancements) for the remainder of the Haven Avenue corridor. On April 3, 2014, the SMCTA approved grant funding for the Haven Avenue Streetscape Project, as bicycle and pedestrian facilities on Haven Avenue would eliminate a gap within the County-wide bikeway and sidewalk network.

Analysis

The Haven Avenue Streetscape Project's objective is to provide a direct connection for bicyclists and pedestrians between the Bay Trail and the City of Redwood City's bikeway and sidewalk network by constructing sidewalks and bicycle facilities along Haven Avenue.

The existing configuration of Haven Avenue permits on-street parking along both sides of Haven Avenue, barring locations where parking has been prohibited via signage or curb markings. As there is insufficient right-of-way to install on-street bicycle lanes while maintaining on-street parking along both sides of Haven Avenue, removal of parking from one side of Haven Avenue within the project corridor was deemed the best possible method for providing enhanced multimodal facilities along the project corridor.

Prior to submitting an application for Measure A grant funding, City staff conducted public outreach to evaluate the attitude of local businesses and property owners regarding parking removal along this corridor. Outreach revealed that local businesses and property owners supported the removal of parking along one side of Haven Avenue within the project corridor, citing frequent occurrences of vehicles being parked on-street that block sightlines and make access to driveways challenging.

Staff anticipates that the removal of on-street parking from one side of Haven Avenue should have a minimal impact on surrounding businesses, as all properties have on-site parking. Generally, parking demand has been observed to be higher on the south side of Haven Avenue; proposed parking removal is along the north side of Haven Avenue.

On August 10, 2015, the Bicycle Commission convened and considered the feasibility of parking removal along one side of Haven Avenue; no public concerns were received by the Commission. No concerns were raised by Bicycle Commission members, and the Bicycle Commission unanimously approved Staff's recommendation to remove parking along the north side of Haven Avenue.

On August 12, 2015, the Transportation Commission convened and considered the feasibility of parking removal along one side of Haven Avenue; no public concerns were received by the Commission. No concerns were raised by Transportation Commission members, and the Transportation Commission unanimously approved Staff's recommendation to remove parking along the north side of Haven Avenue.

Proposed Project Improvements and Configuration:

Presently, the project corridor lacks bicycle facilities and continuous pedestrian facilities, resulting in a gap within the City's bikeway and sidewalk networks. To eliminate this gap, this project will construct a number of infrastructure improvements, as shown in Attachment B and described below.

Project bicycle facilities, comprised of dedicated on-street bicycle lanes (Class II Bikeways), will be installed throughout the project corridor. Where sufficient right-of-way exists, a striped buffer providing additional separation between motorists and bicycle lanes will be installed. At potential bicycle-vehicle conflict locations such as driveways, green, high-visibility bikeway treatments will be installed to enhance the visibility of the bicycle lane and bicyclists to motorists, further enhancing the safety of bicyclists along this project corridor.

Project pedestrian facilities, comprised of dedicated sidewalks, will be installed throughout the project corridor (when needed) to provide a continuous length of sidewalk within the project corridor. The St. Anton-funded portion of this project will construct sidewalks and a dedicated pedestrian bridge over the Atherton Channel which Haven Avenue crosses. In addition, the St. Anton-funded portion of this project will install high-visibility crosswalks and curb ramps with truncated domes at several locations to further enhance pedestrian safety and ensure compliance with Americans with Disabilities Act (ADA) requirements.

Impact on City Resources

This project is funded from developer contributions and a grant from the SMCTA Bicycle and Pedestrian Program. No additional funds are required, and this project is programmed in the City's Capital Improvement Program for Fiscal Year 2015-2016.

Environmental Review

As this project involves the reconfiguration of an existing public right-of-way, it is Categorically Exempt from environmental review per Section 15301(c) of the California Environmental Quality Act.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

- A. Haven Avenue Project Map
- B. Haven Avenue at Marsh Road Conceptual Roadway Improvements Plans
- C. Resolution

Report prepared by:

Mark Young, Transportation Engineering Assistant

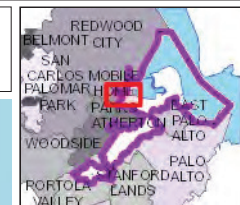
Report reviewed by:

Nicole H. Nagaya, PE, Transportation Manager

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Haven Avenue Project Map



- Legend**
- Railroad
 - Streets
 - Sphere Of Influence
 - City Limits



1,307.1 0 653.57 1,307.1 Feet

NAD_1983_StatePlane_California_III_FIPS_0403_Feet
City of Menlo Park GIS

This map is for reference purposes only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. The City of Menlo Park and its staff shall not be held responsible for errors or omissions. Please contact City staff for the most current information.

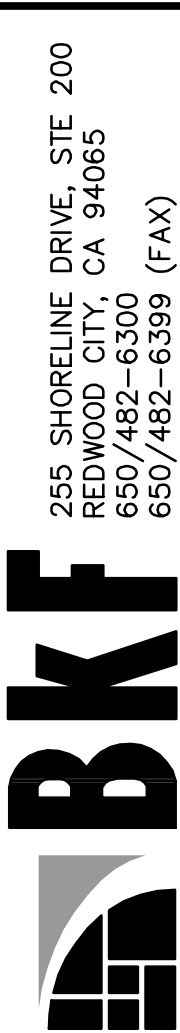
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HAVEN AVENUE AT MARSH ROAD

CONCEPTUAL ROADWAY IMPROVEMENTS

CITY OF MENLO PARK, SAN MATEO COUNTY, CALIFORNIA

CALTRANS PERMIT #: 0413-NSV1148



HAVEN AVENUE AT MARSH ROAD

CONCEPTUAL ROADWAY IMPROVEMENTS

TITLE SHEET

CONCEPTUAL DESIGN PER MITIGATION MEASURES TR-1g AND TR-2w

SAN MATEO COUNTY

CALIFORNIA

No.	Revisions
No.	
Date 03/20/2015	Scale AS SHOWN
	Design EM
	Drawn
	Approved
	Job No 20120200-11
Drawing Number:	
C-1	
1	OF 11

PROJECT CONTACTS

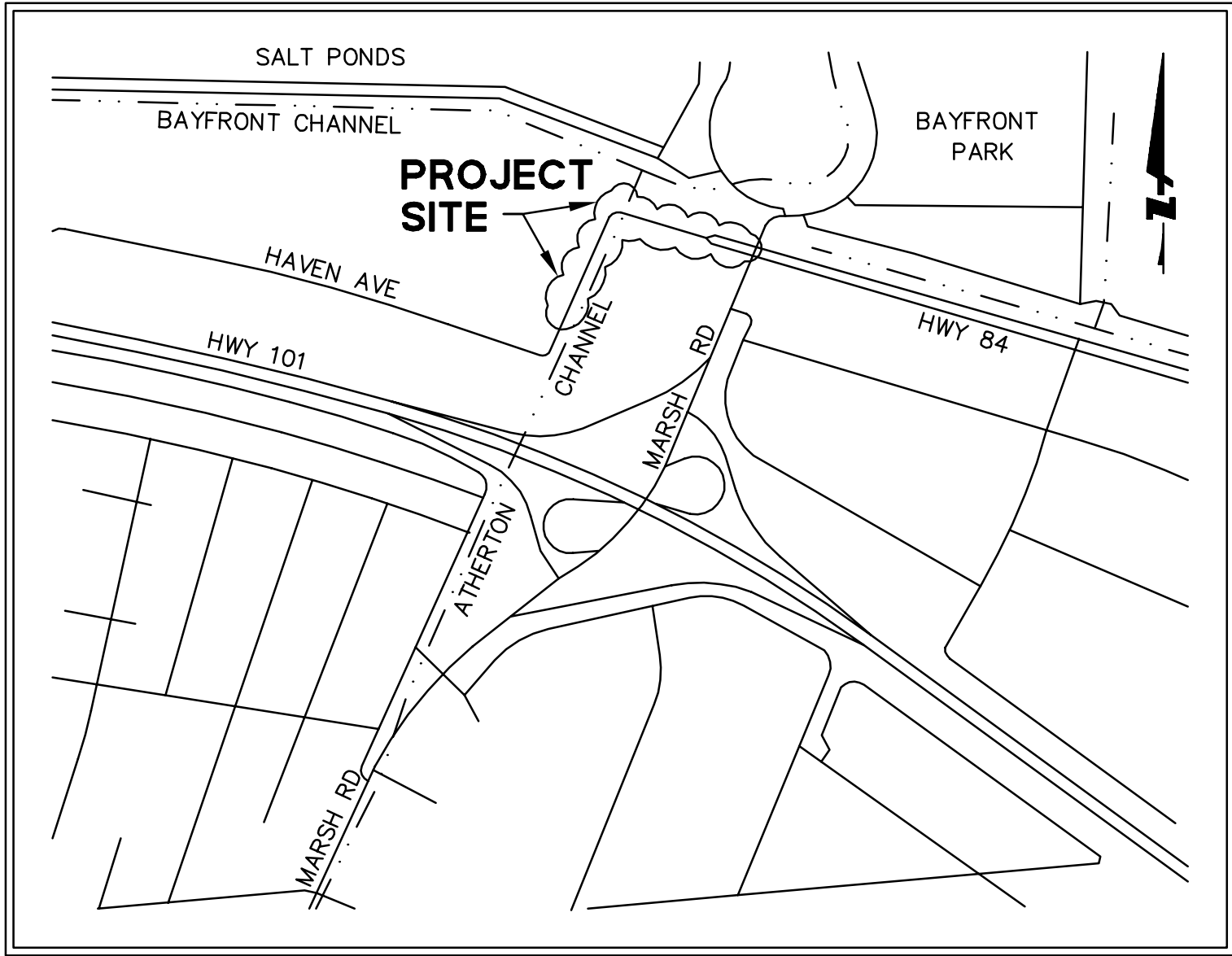
OWNER/DEVELOPER:	ST ANTON PARTNERS 1801 I STREET SACRAMENTO, CA 94588 CONTACT: RACHEL GREEN PHONE: (916) 444-9887
CIVIL ENGINEER / SURVEYOR:	BKF ENGINEERS 255 SHORELINE DRIVE, SUITE 200 REDWOOD CITY, CA 94065 CONTACT: EASTON McALLISTER PHONE: (650) 482-6300
LANDSCAPE ARCHITECT:	MJS DESIGN GROUP 507 30TH STREET NEWPORT BEACH, CA 92663 CONTACT: PHONE: (949) 675-9964
GEOTECHNICAL ENGINEER:	EEL GEOTECHNICAL & ENVIRONMENTAL SOLUTIONS 2195 FARADAY AVENUE, SUITE K CARLSBAD, CA 92008 CONTACT: BILL MORRISON PHONE: (760) 431-3747
DRY UTILITIES ENGINEER	RGA DESIGN 6400 VILLAGE PARKWAY SUITE 204 DUBLIN, CA 94568 CONTACT: DARLENE HAYES PHONE: (925) 556-1725
SEWER SERVICE:	WEST BAY SANITARY DISTRICT 500 LAUREL STREET MENLO PARK, CA 94025 CONTACT: BILL KITAJIMA PHONE: (650) 321-0384
WATER SERVICE:	MENLO PARK WATER DISTRICT 701 LAUREL STREET MENLO PARK, CA 94025 CONTACT: PHONE: (650) 330-6780
FIRE PROTECTION:	MENLO PARK FIRE PROTECTION DISTRICT 1017 MIDDLEFIELD ROAD REDWOOD CITY, CA 94063 CONTACT: PHONE: (650) 780-7000
GAS AND ELECTRIC SERVICE:	PACIFIC GAS AND ELECTRIC 275 INDUSTRIAL RD, RM 129 SAN CARLOS, CA 94070 CONTACT: PHONE: (650) 598-7326
SWPPP:	NCRM, INC. 6190 NORTH STATE ST. CALPELLA, CA 95418 CONTACT: JUSTIN COFFMAN PHONE: (707) 485-7211

ENGINEER'S STATEMENT

THESE PLANS HAVE BEEN PREPARED BY ME OR UNDER MY DIRECTION IN ACCORDANCE WITH STANDARD ENGINEERING PRACTICE.

EASTON C. MCALLISTER
P.E. #61148
BKF ENGINEERS

DATE



VICINITY MAP

N.T.S.

SHEET INDEX

NO.	NAME	DESCRIPTION
1	C-1	TITLE SHEET
2	C-2	EXISTING CONDITIONS AND DEMOLITION PLAN
3	C-3	HORIZONTAL CONTROL PLAN
4	C-4	GRADING PLAN
5	C-5	STRIPING PLAN VIEW
6	C-6	STRIPING CROSS SECTIONS
7	C-7	STRIPING CROSS SECTION DETAILS
8	C-8	DETAILS SHEET
9	C-9	HAVEN AVENUE AND HAVEN COURT INTERSECTION
10	C-10	EROSION CONTROL PLAN
11	C-11	EROSION CONTROL NOTES AND DETAILS

ABBREVIATIONS

SYMBOL	DESCRIPTION
AB	AGGREGATE BASE
AC	ASPHALTIC CONCRETE
BC	BEGIN CURVE
BFP	BACK FLOW PREVENTOR
BW	BACK OF WALK
CB	CATCH BASIN
DW	DOMESTIC WATER
EC	END CURVE
E, ELEC	ELECTRIC
EX, EXIST	EXISTING
EG	EXISTING GROUND
EL, ELEV	ELEVATION
EP	EDGE OF PAVEMENT
FG	FINISH GRADE
FL	FLOW LINE
GB	GRADE BREAK
GW	GUY WIRE
HP	HIGH POINT
JP	JOINT POLE
LF	LINEAR FOOT
LP	LIP OF GUTTER
MAX	MAXIMUM
MIN	MINIMUM
NTS	NOT TO SCALE
OH	OVERHEAD
PL	PROPERTY LINE
PR, PROP	PROPOSED
R	RADIUS
RW	RIGHT OF WAY
S	SLOPE
SSMH	SANITARY SEWER MANHOLE
TC	TOP OF CURB
TP	TOP OF PAVEMENT
TYP	TYPICAL

PROJECT BENCHMARK

CITY OF MENLO PARK BENCHMARK NO. 3, EL 5.428 FEET (NGDV 29), BRONZE DISK EPOXIED INTO THE TOP OF CONCRETE ON THE NORTHERLY CURB LINE OF HAVEN AVENUE AND WEST SIDE OF A STORM WATER CATCH BASIN.

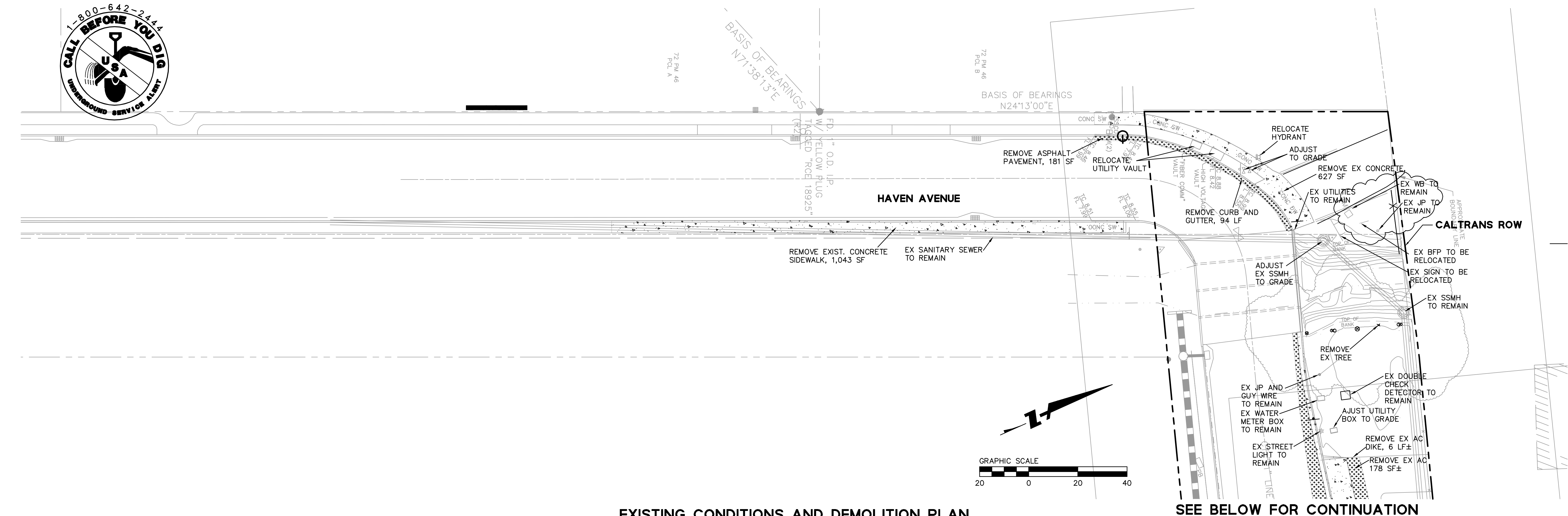
AT THE REQUEST OF THE CITY OF MENLO PARK, A MATHEMATICAL ADJUSTMENT OF 2.70 FEET WAS MADE TO BRING THE SITE TO NAVD88. NAVD88 BENCH MARK ELEVATION = 8.13 FEET.

BASIS OF BEARINGS

THE EAST LINE OF PARCEL 2, AS SHOWN IN BOOK 53 OF PARCEL MAPS ON PAGE 38 WAS TAKEN AS N24°12'50"E, WAS ESTABLISHED FROM FOUND MONUMENTS AND SERVED AS THE BASIS OF BEARINGS.

FLOOD ZONE

FEMA DESIGNATED FLOOD ZONE; FLOOD ZONE "AE"; AREAS OUTSIDE 0.2% ANNUAL CHANCE FLOOD PLAIN PER FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) FLOOD INSURANCE RATE MAP COMMUNITY PANEL NO. 06081 C 0306 E DATED OCTOBER 16, 2012.



EXISTING CONDITIONS AND DEMOLITION PLAN
1" = 20'

SEE ABOVE FOR CONTINUATION

Annotations and Callouts:

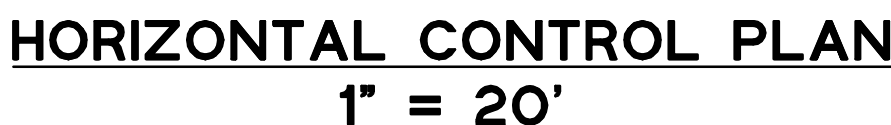
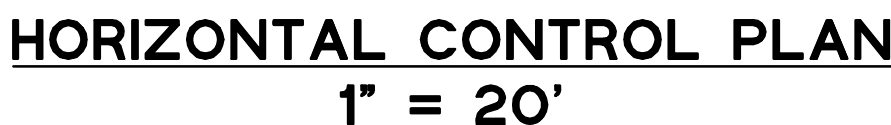
- MENLO-ATHERTON STORAGE
- CALTRANS ROW
- EX UTILITY BOXES TO REMAIN
- REMOVE EX AC 178 SF±
- EX SIGN TO REMAIN
- ADJUST TELECOM VAULT TO GRADE
- REMOVE EX CURB INLET
- REMOVE CURB AND GUTTER, 360 LF
- REMOVE EX CONCRETE 345 SF±
- CT "F1" LINE (R1)
- HAVEN AVENUE
- ADJUST UTILITY BOX TO GRADE
- REMOVE EX AC 1,170 SF±
- EX STREET LIGHT TO REMAIN
- EX UTILITY BOXES TO REMAIN
- EX CCTV TO REMAIN
- REMOVE EX CONCRETE 385 SF±
- OVERHEAD ELECTRICAL POLE TO REMAIN
- ADJUST SSMH TO GRADE SEE GRADING PLAN
- RELOCATE TRAFFIC SIGN
- REMOVE EX TREE
- RELOCATE TRAFFIC SIGN
- REMOVE BOLLARD
- RELOCATE FIRE HYDRANT
- ADJUST UTILITY BOX TO GRADE
- UTILITY BOX TO REMAIN
- EXISTING FENCE TO REMAIN IN PLACE
- RELOCATE TRAFFIC SIGN
- OVERHEAD UTILITY POLE TO REMAIN
- REMOVE EX AC 3,646 SF±
- TRAFFIC SIGNAL TO REMAIN
- REMOVE ASPHALT PAVEMENT, 314 SF
- REMOVE EX CURB, GUTTER AND SIDEWALK 72 SF±
- TRAFFIC SIGNAL TO REMAIN
- CT "F1" LINE (R1)
- CT "W" LINE (R1)
- BAYFRONT EXPRESSWAY
- MARSH ROAD
- WEST BAY SANITARY DISTRICT
- BAYFRONT PARK

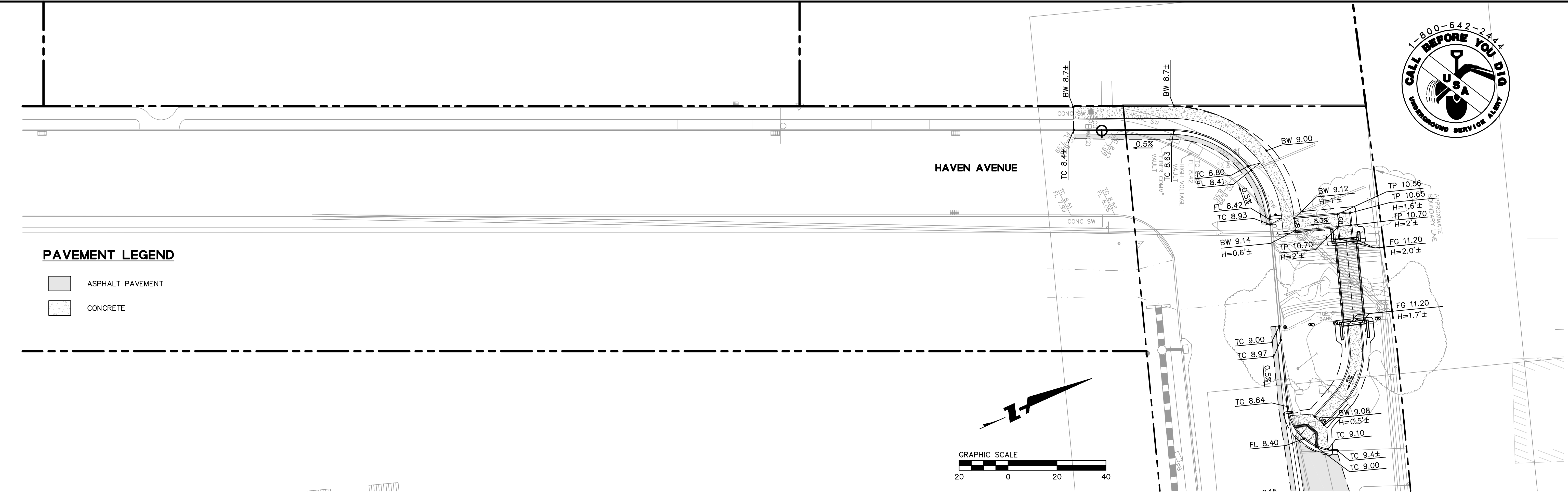
GRAPHIC SCALE: 20 0 20 40

Professional Engineer Seal: REGISTERED PROFESSIONAL ENGINEER, CIVIL, STATE OF CALIFORNIA, No. 61148, EXP. 12/31/14, LEONOR C. MCALLISTER

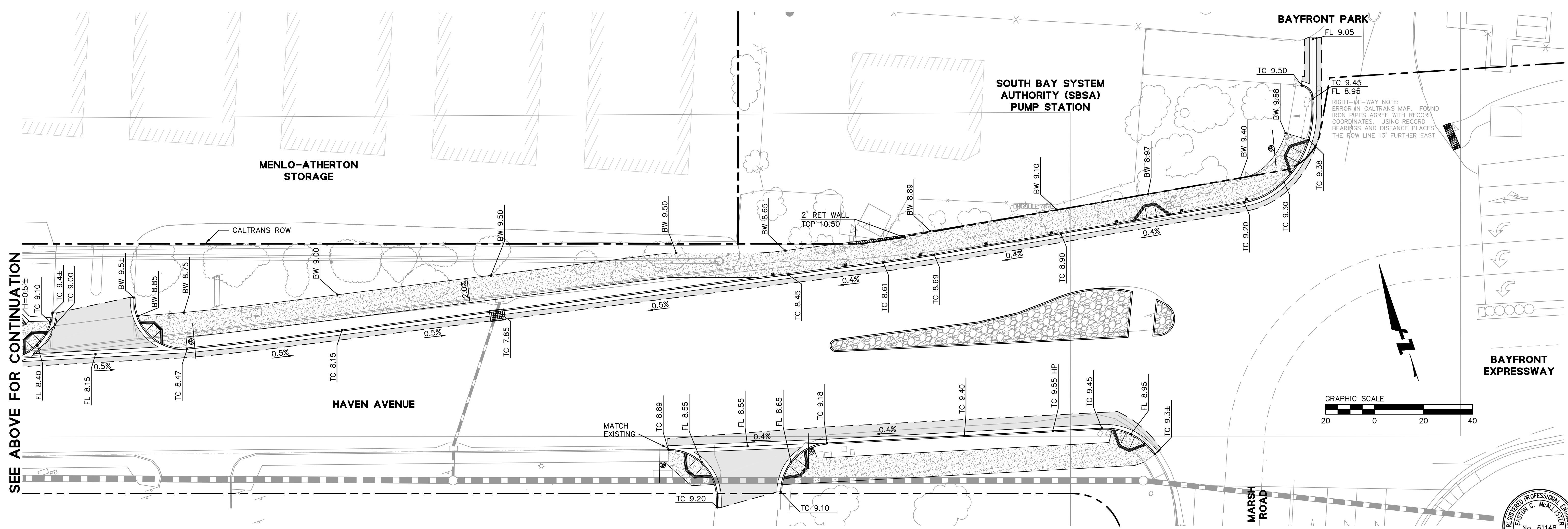
Notes:

- STREET-OF-WAY NOTE: FOR AN CALTRANS MAP, FOUND IRON PIPES AGREE WITH RECORD PLATES. USING RECORD PLATES AND DISTANCE PLACES THE NEW LINE 13' FURTHER WEST.





GRADING PLAN
1" = 20'



GRADING PLAN
1" = 20'

SEE ABOVE FOR CONTINUATION

SEE BELOW FOR CONTINUATION

BKF
ENGINEERS/PLANNERS/SURVEYORS

255 SHORELINE DRIVE, STE 200
REDWOOD CITY, CA 94065
650/482-6300
650/482-6399 (FAX)

CALIFORNIA

HAVEN AVENUE AT MARSH ROAD
CONCEPTUAL ROADWAY IMPROVEMENTS
GRADING PLAN

SAN MATEO COUNTY

Revisions	
No.	Description

Date: 03/20/2015

Scale: AS SHOWN

Design: EM

Drawn: [Signature]

Approved: [Signature]

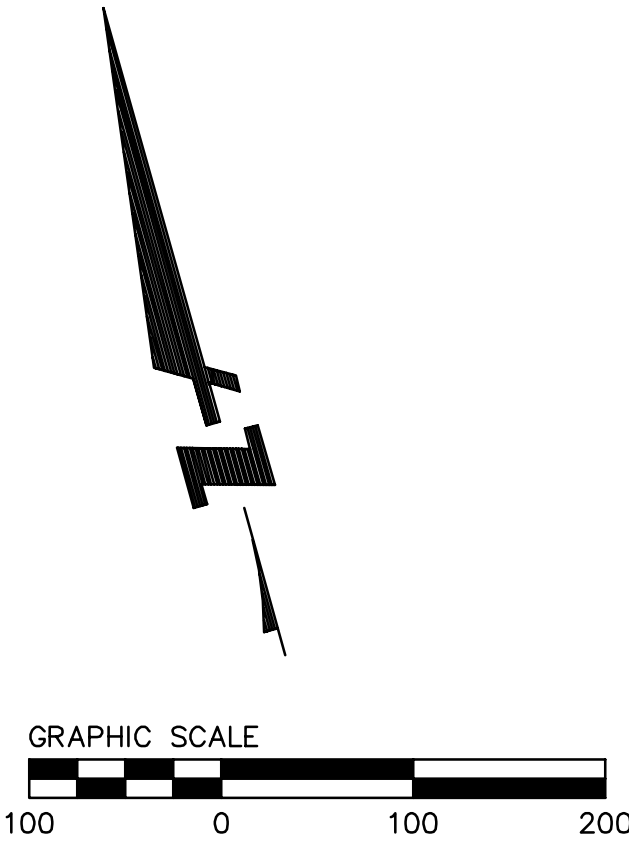
Job No: 20120200-11

Drawing Number:

C-4

4 OF 11

CONCEPTUAL DESIGN PER MITIGATION MEASURES TR-1g AND TR-2w



GENERAL NOTES

- 1. SPACE CALTRANS BICYCLE LANE ARROW SYMBOL, DETAIL A24A AND A24C, AT 150 FEET THROUGHOUT PROPOSED BIKE LANE.

STRIPING SECTION LEGEND

STRIPING SECTION #1 APPROX. 604 LF	
STRIPING SECTION #2 APPROX. 2125 LF	
STRIPING SECTION #3 APPROX. 350 LF	
STRIPING BUFFER AT EXISTING DRIVEWAY DETAIL 1/C-10	
LIMIT OF WORK	

255 SHORELINE DRIVE, STE 200
REDWOOD CITY, CA 94065
650/482-6300
650/482-6399 (FAX)

BKF

ENGINEERS/PLANNERS/SURVEYORS

HAVEN AVENUE AT MARSH ROAD
CONCEPTUAL ROADWAY IMPROVEMENTS
STRIPING PLAN VIEW

SAN MATEO COUNTY
MENLO PARK

CALIFORNIA

Revisions

No.

Date

Scale

Design

Drawn

Approved

Job No

03/20/2015

1"=100'

RB

RB

JD

20120200-11

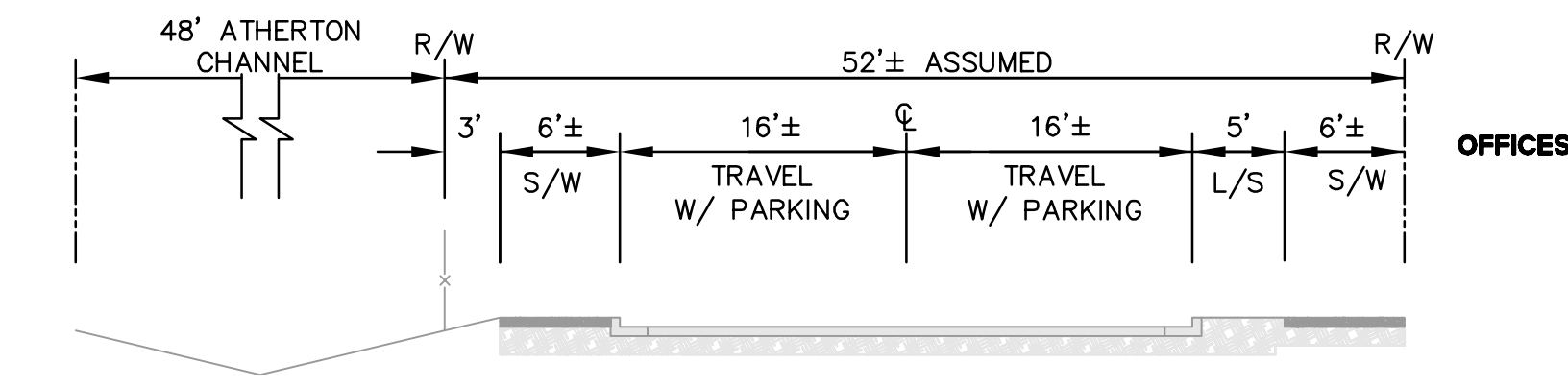
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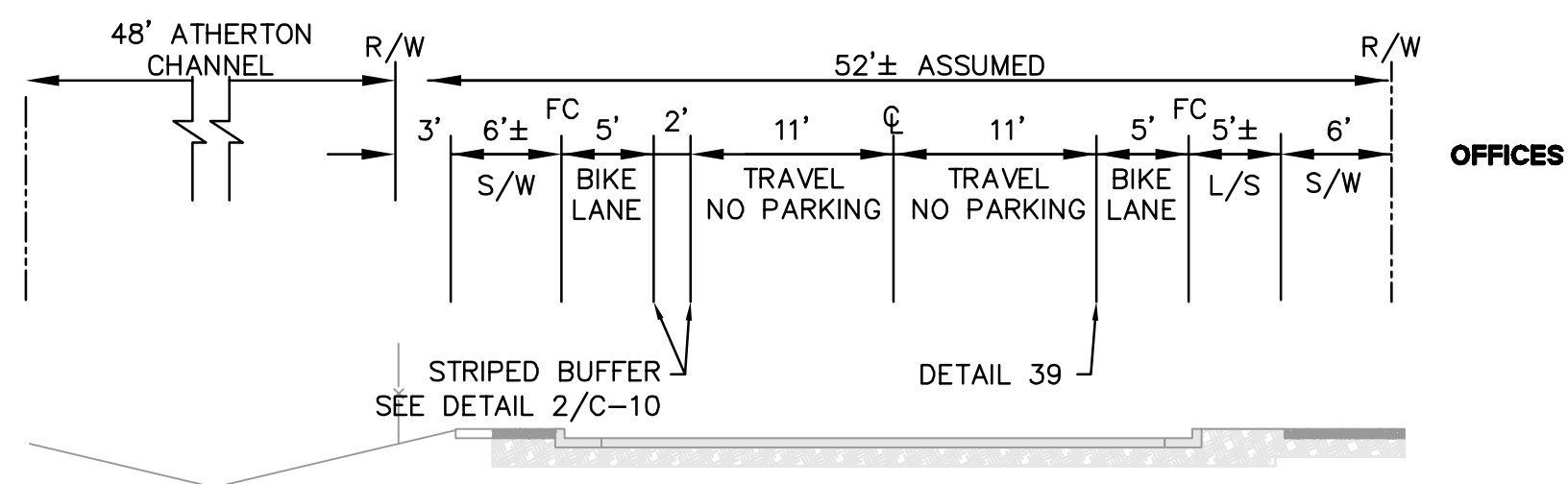
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OF

11



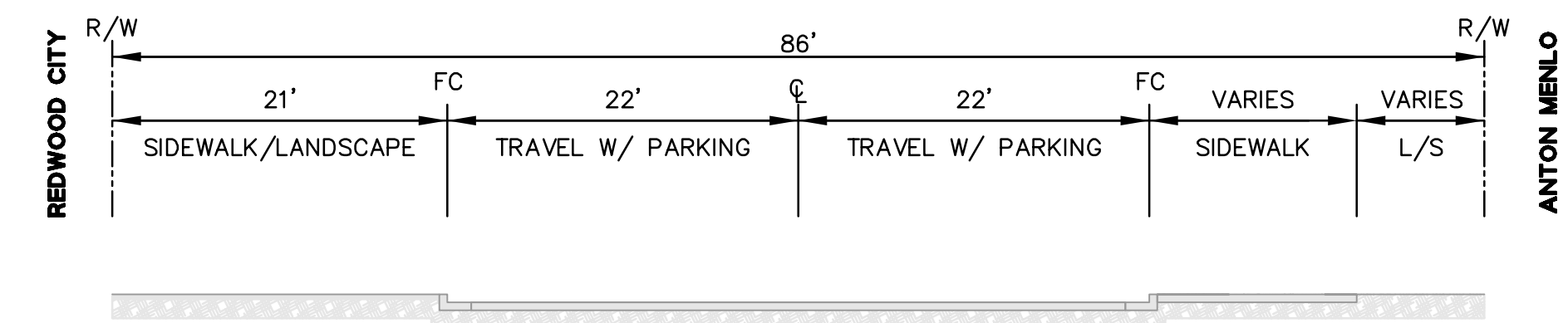
HAVEN AVENUE – EXISTING



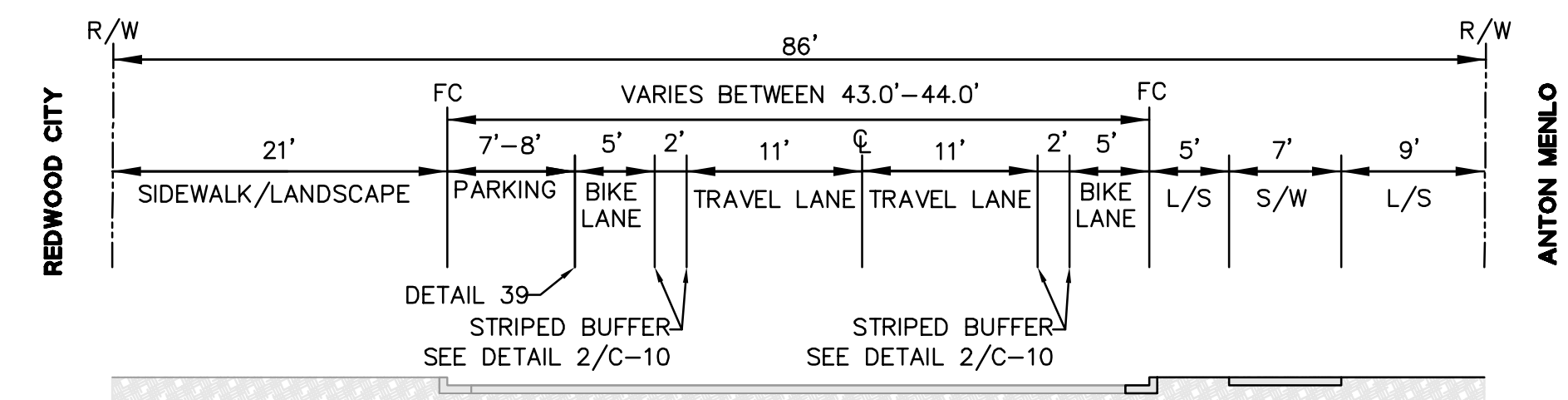
HAVEN AVENUE – PROPOSED

1 —

HAVEN AVENUE STREET SECTION

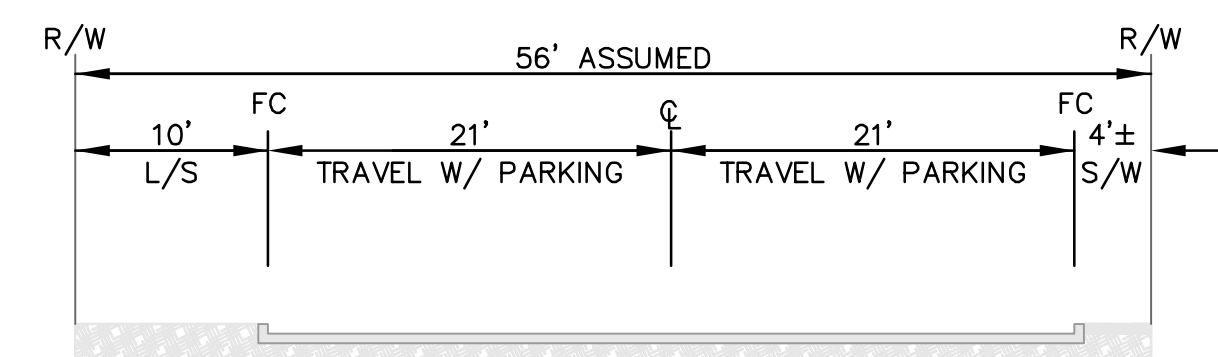


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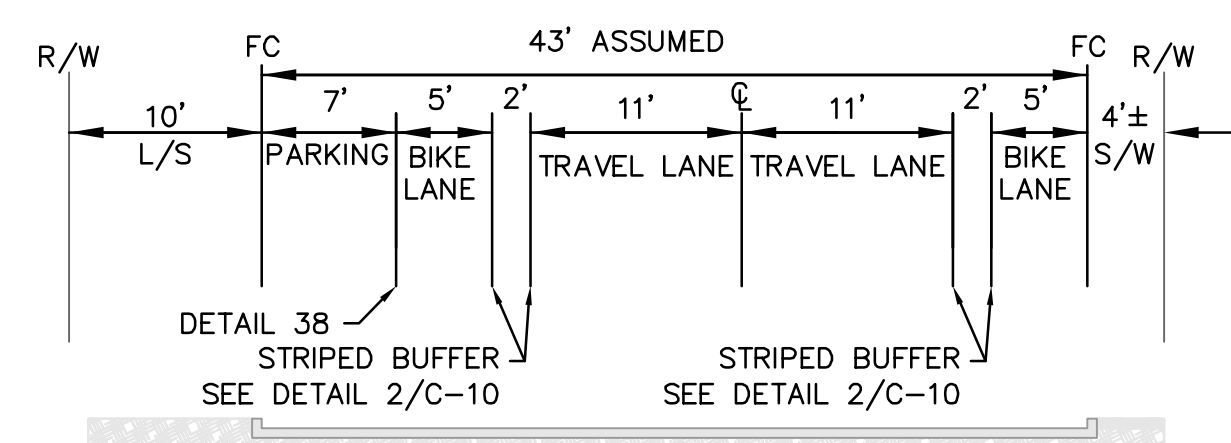


HAVEN AVENUE – PROPOSED

2 HAVEN AVENUE STREET SECTION

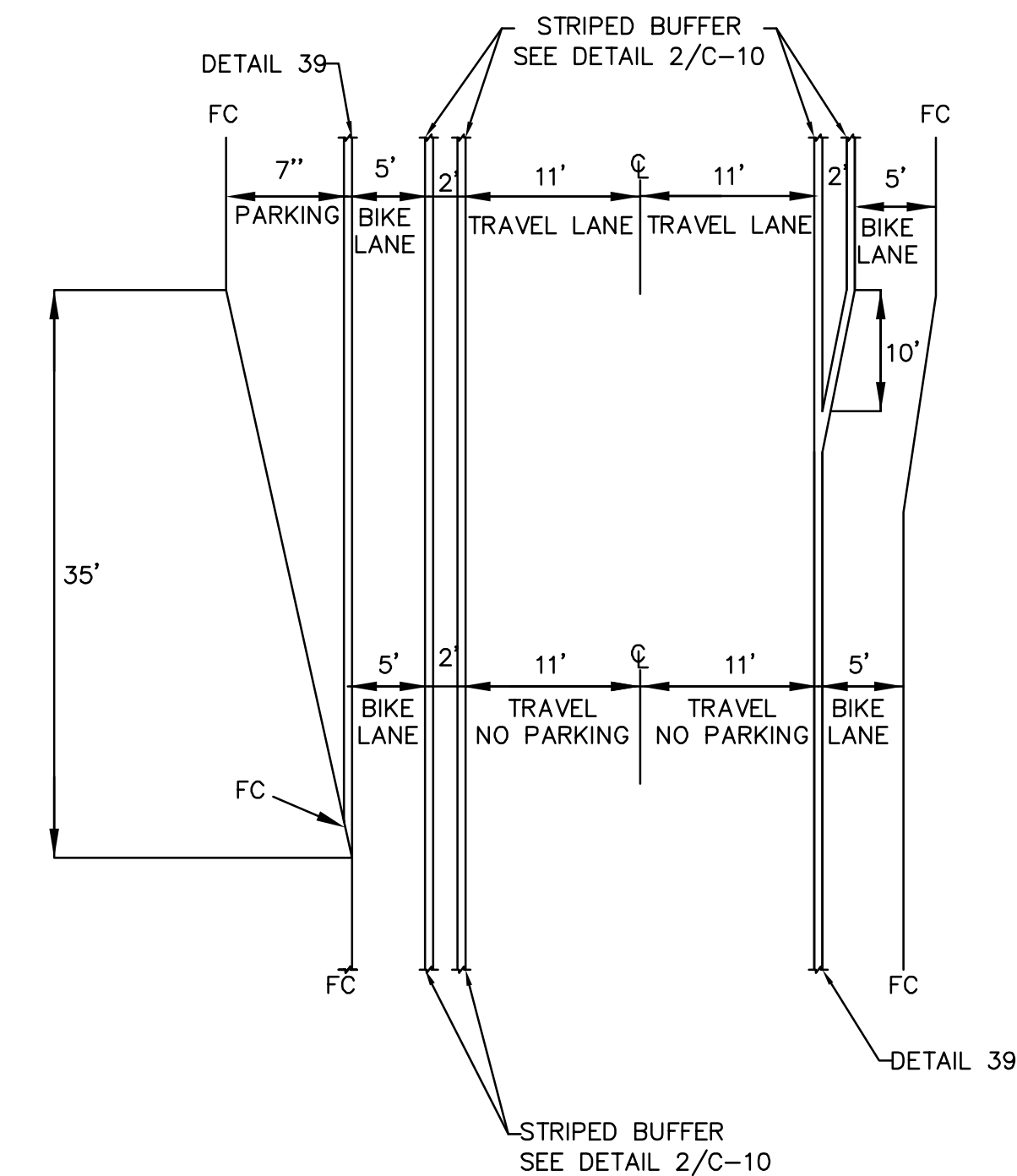


HAVEN AVENUE – EXISTING

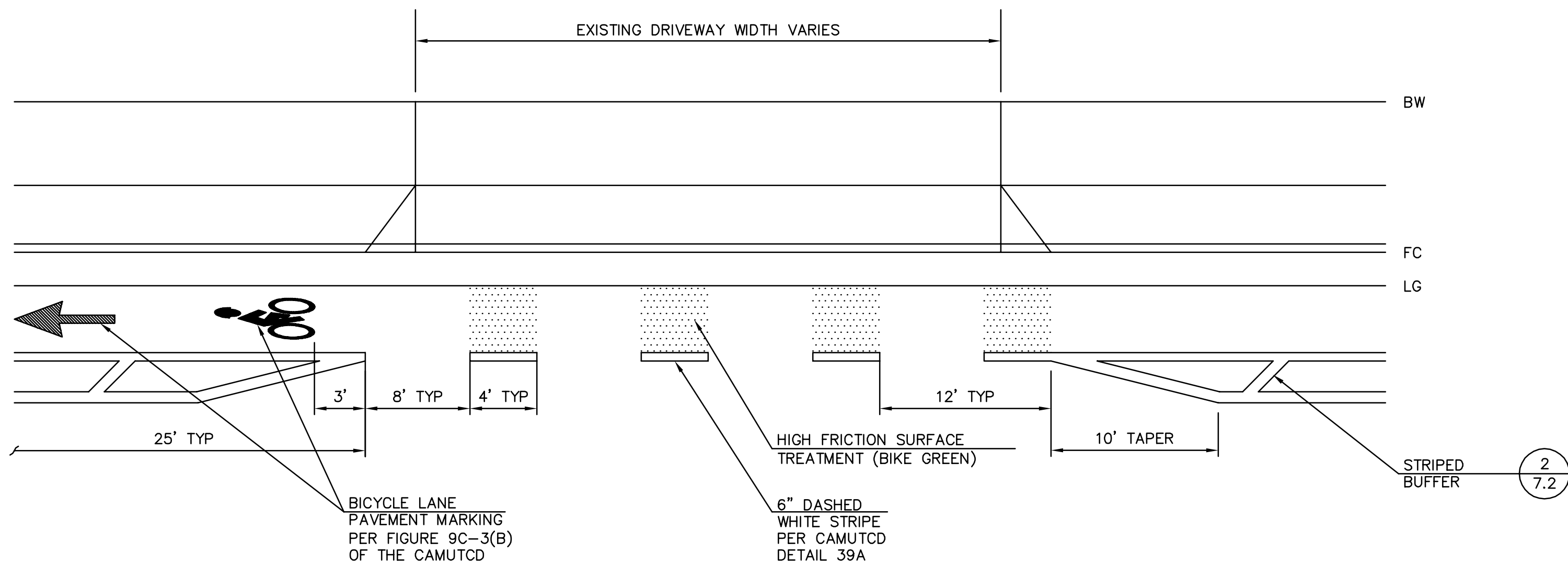


HAVEN AVENUE – PROPOSED

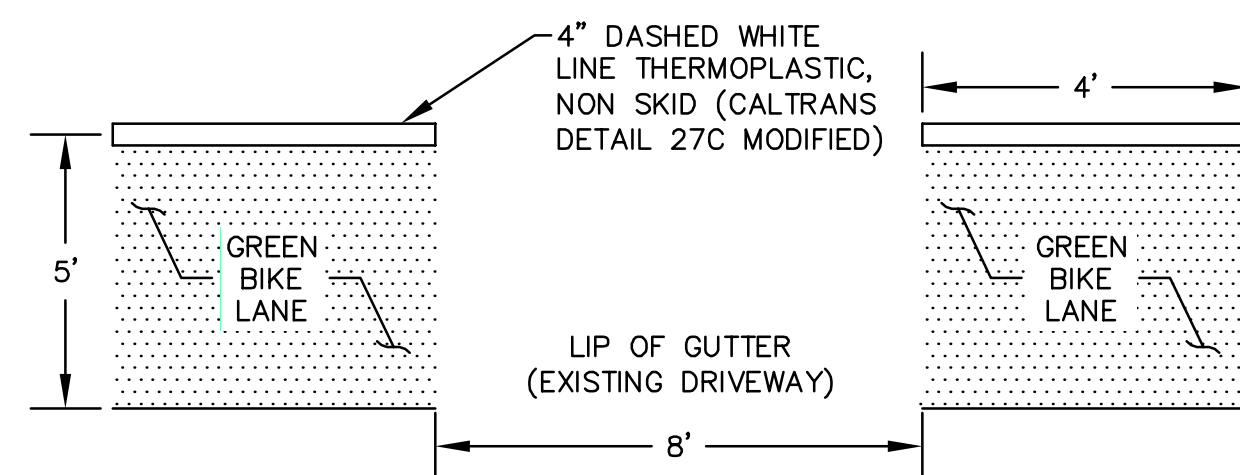
3 HAVEN AVENUE STREET SECTION



4 STRIPING TRANSITION

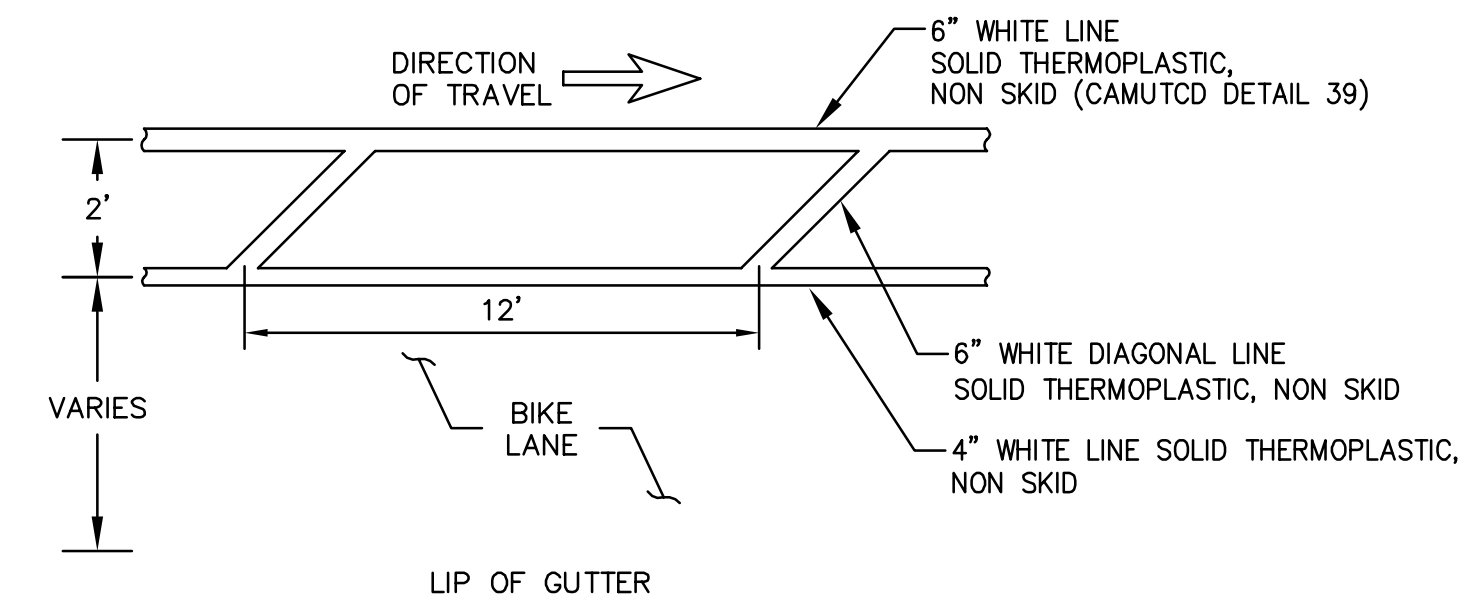


1
—
BIKE LANE STRIPING IN FRONT OF DRIVEWAY



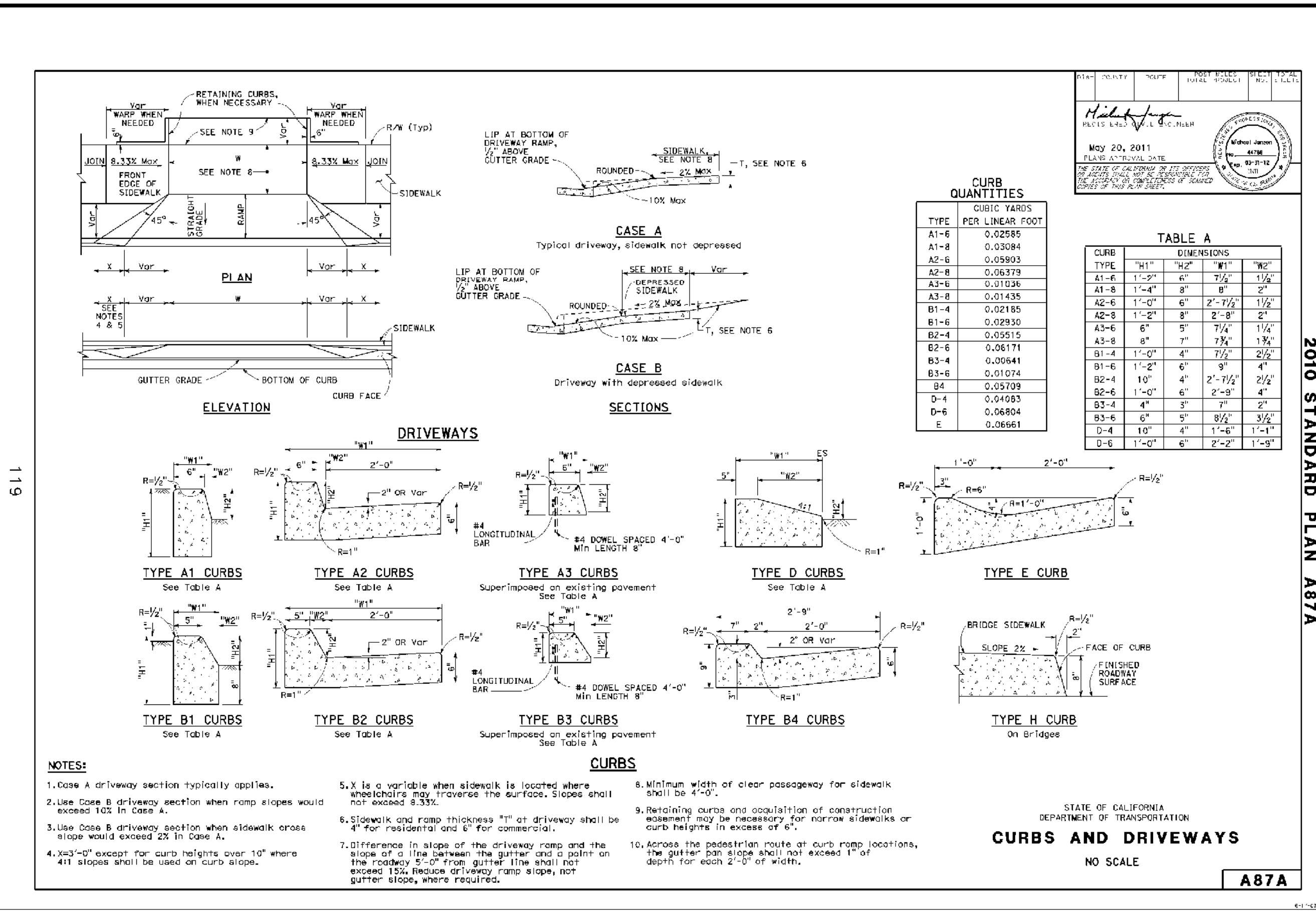
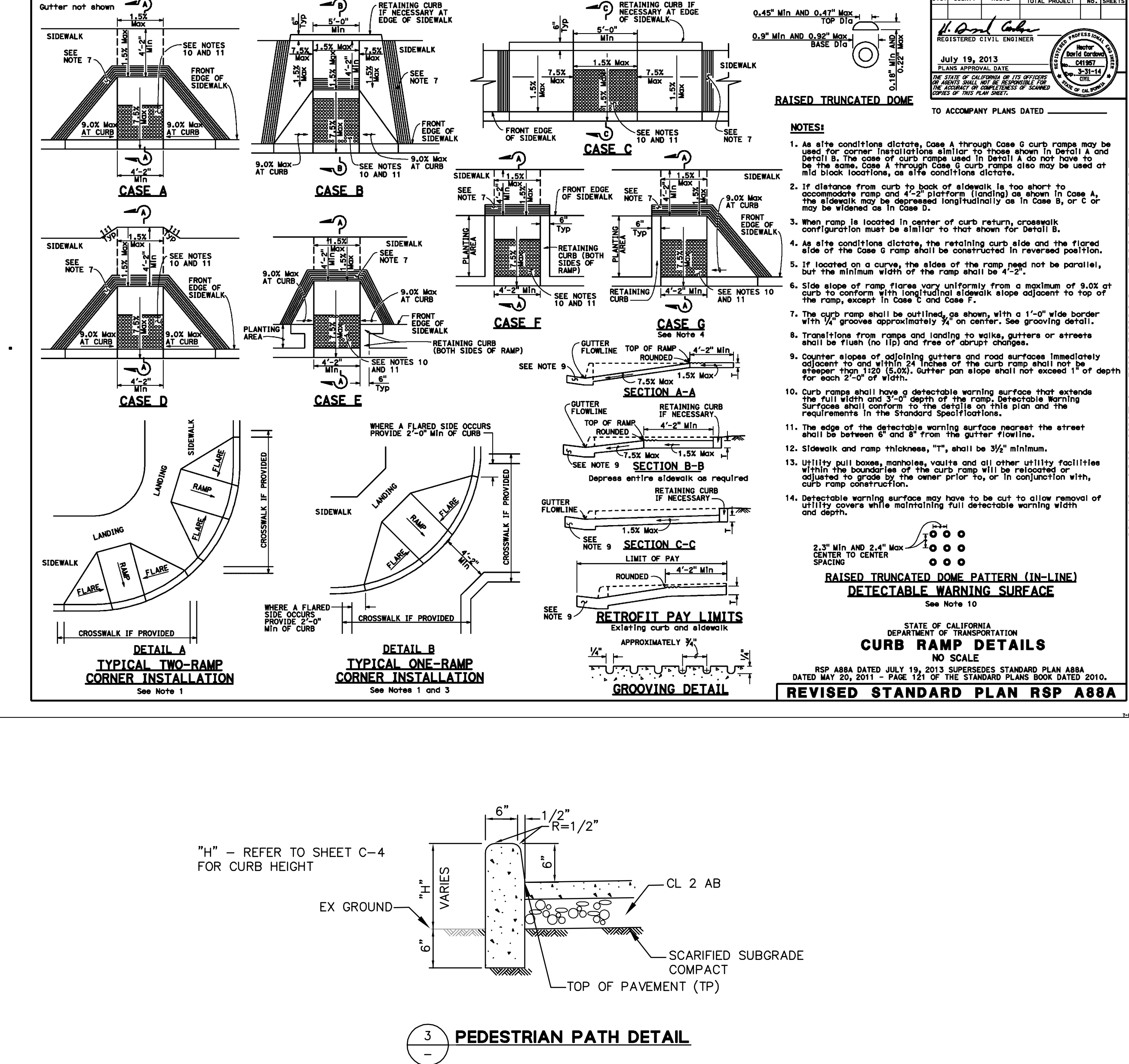
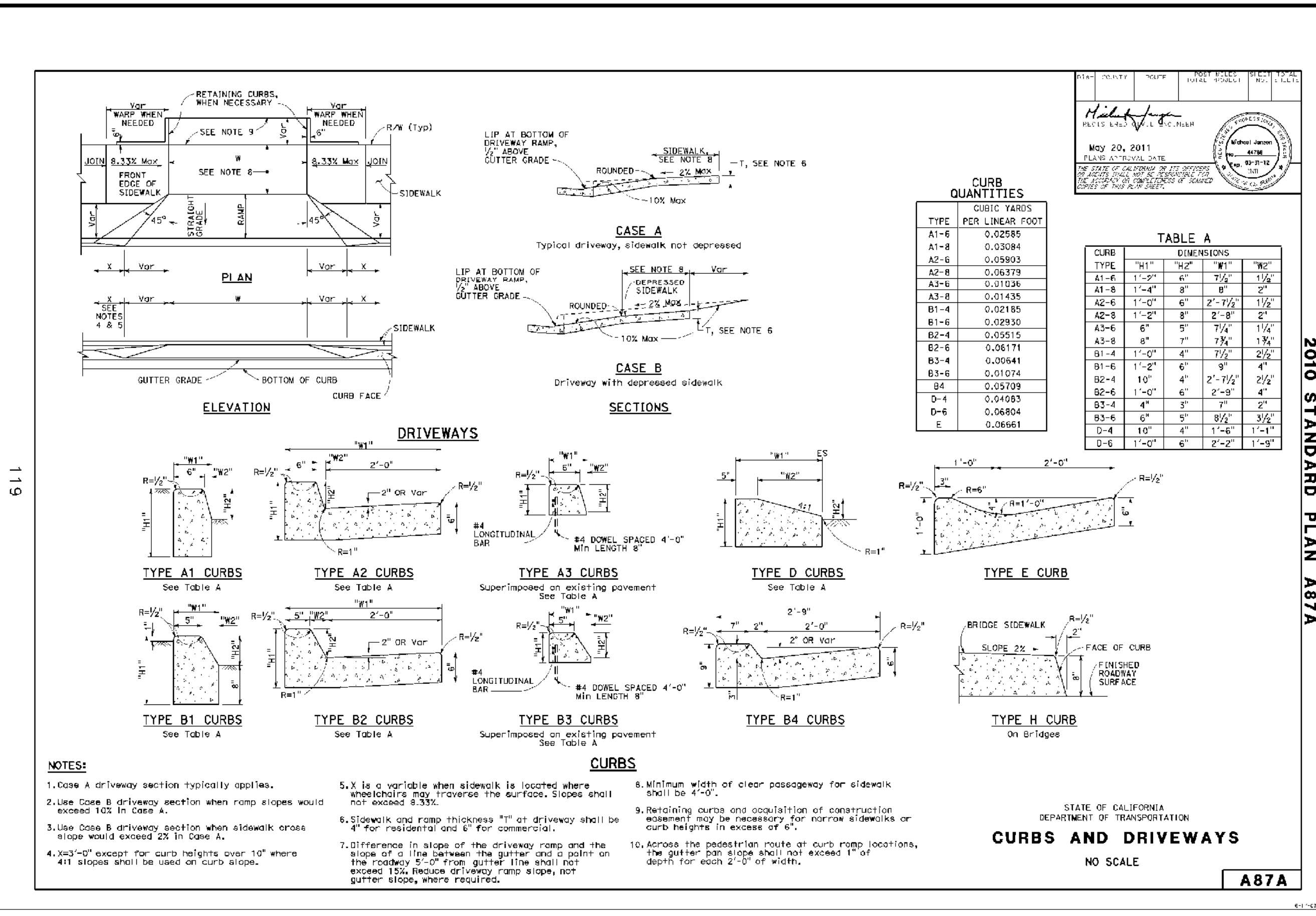
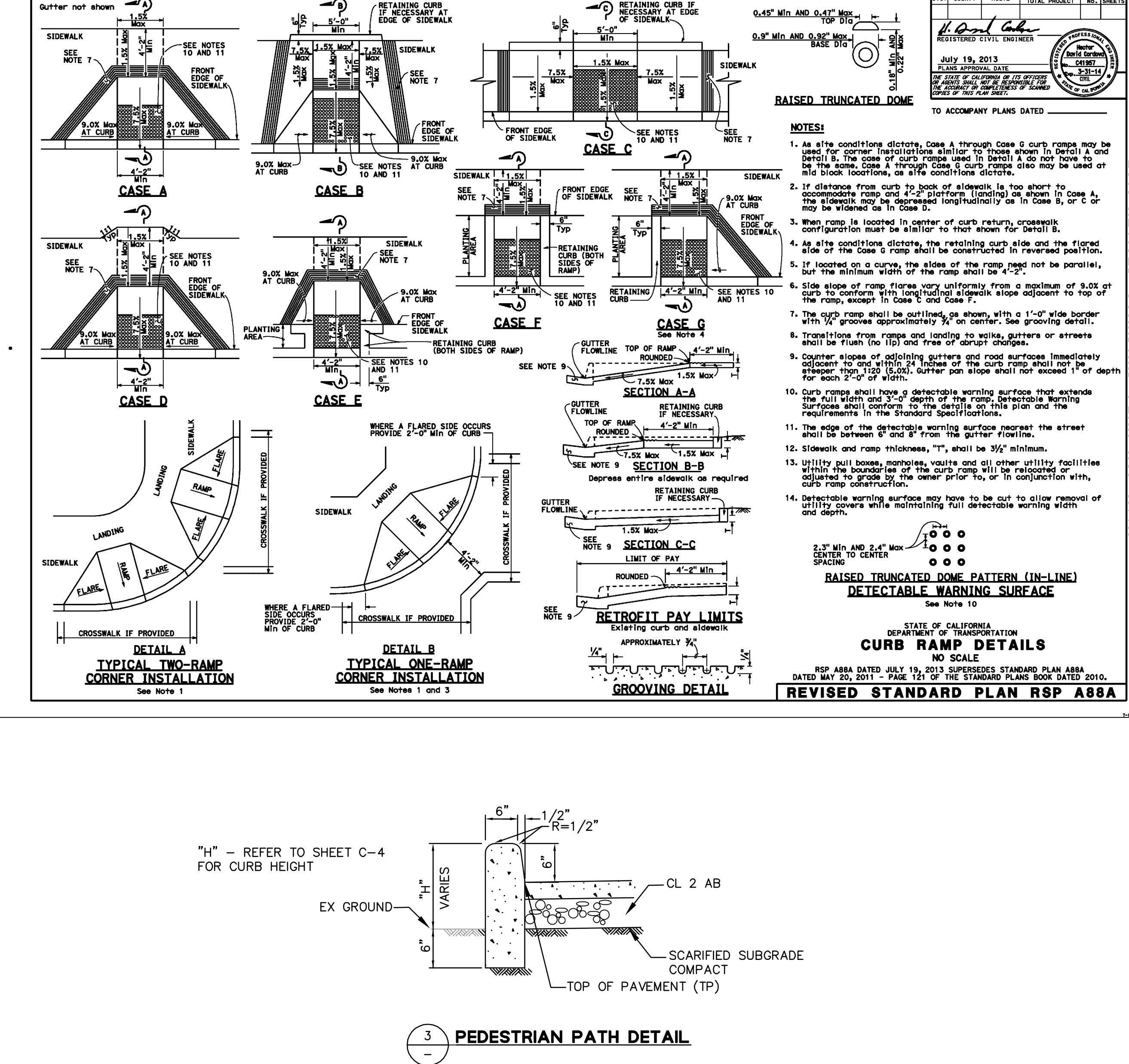
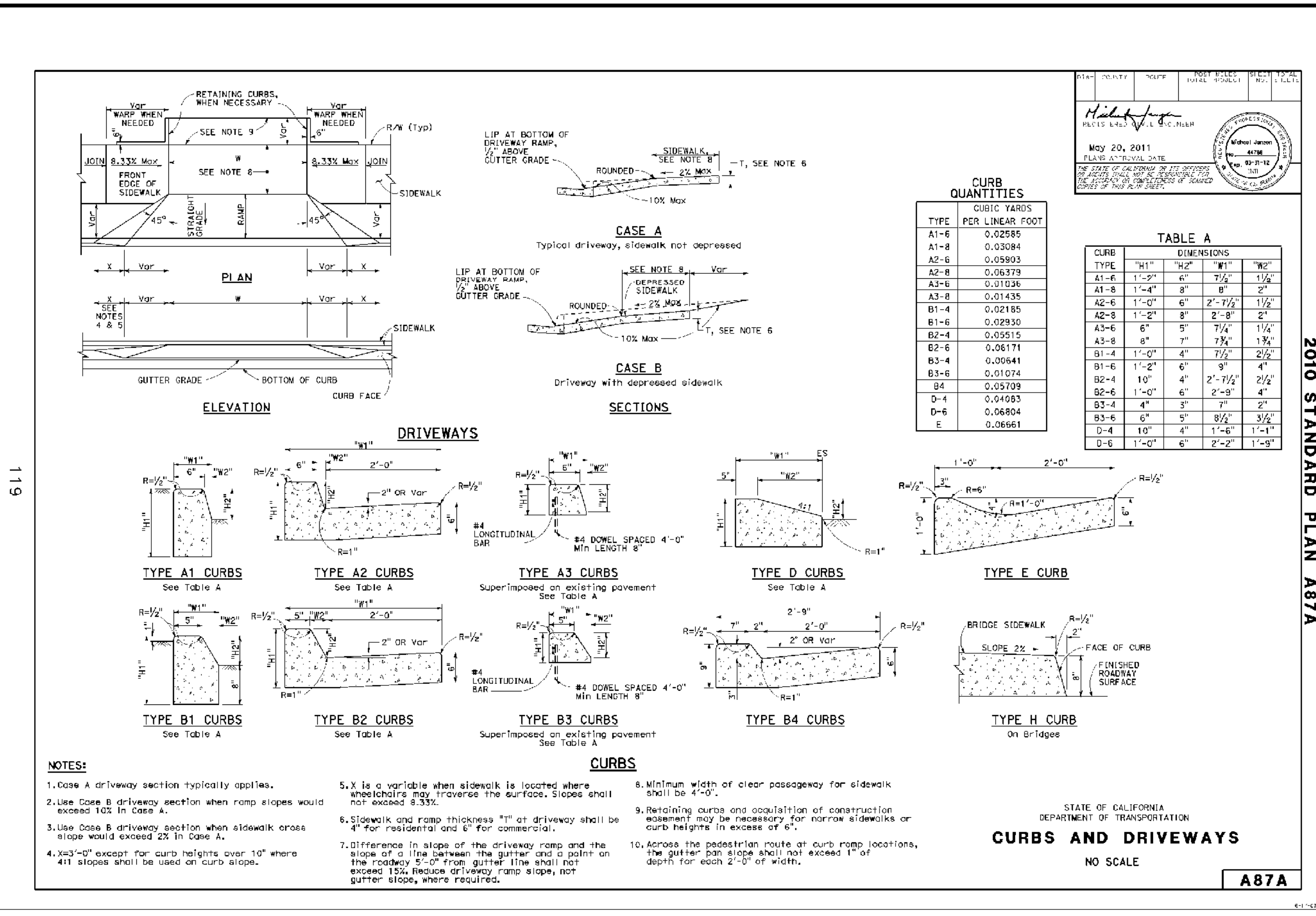
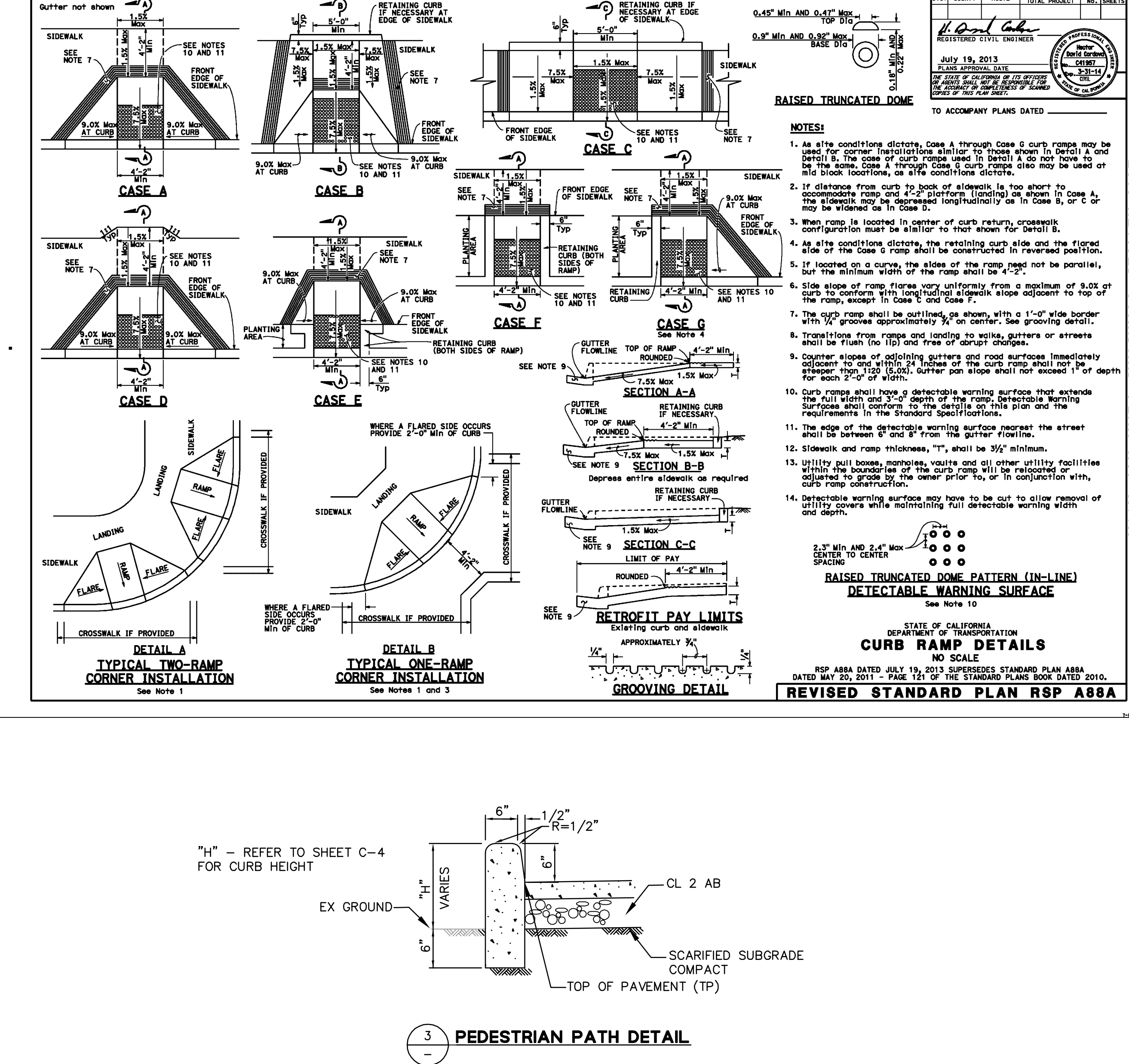
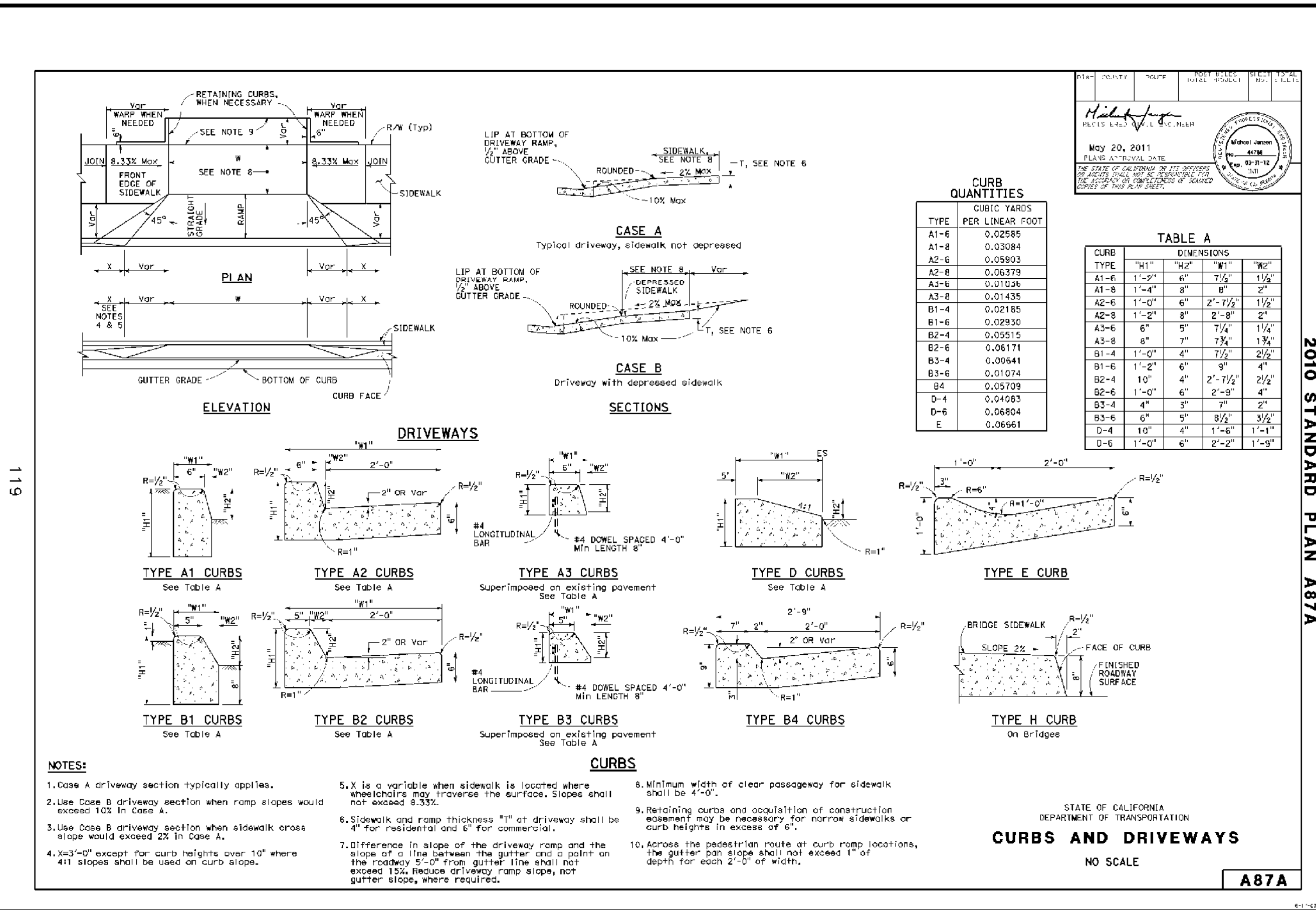
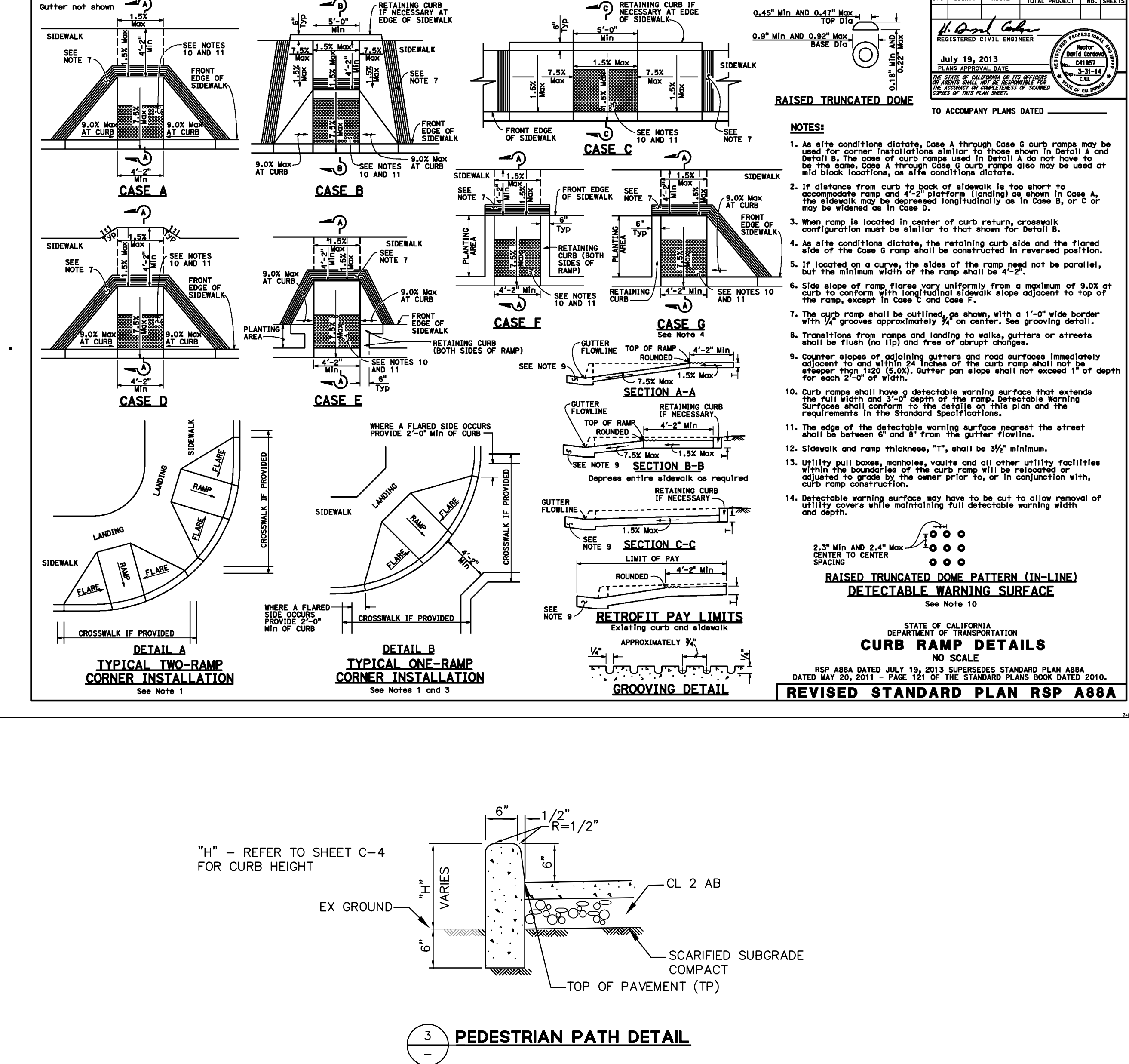
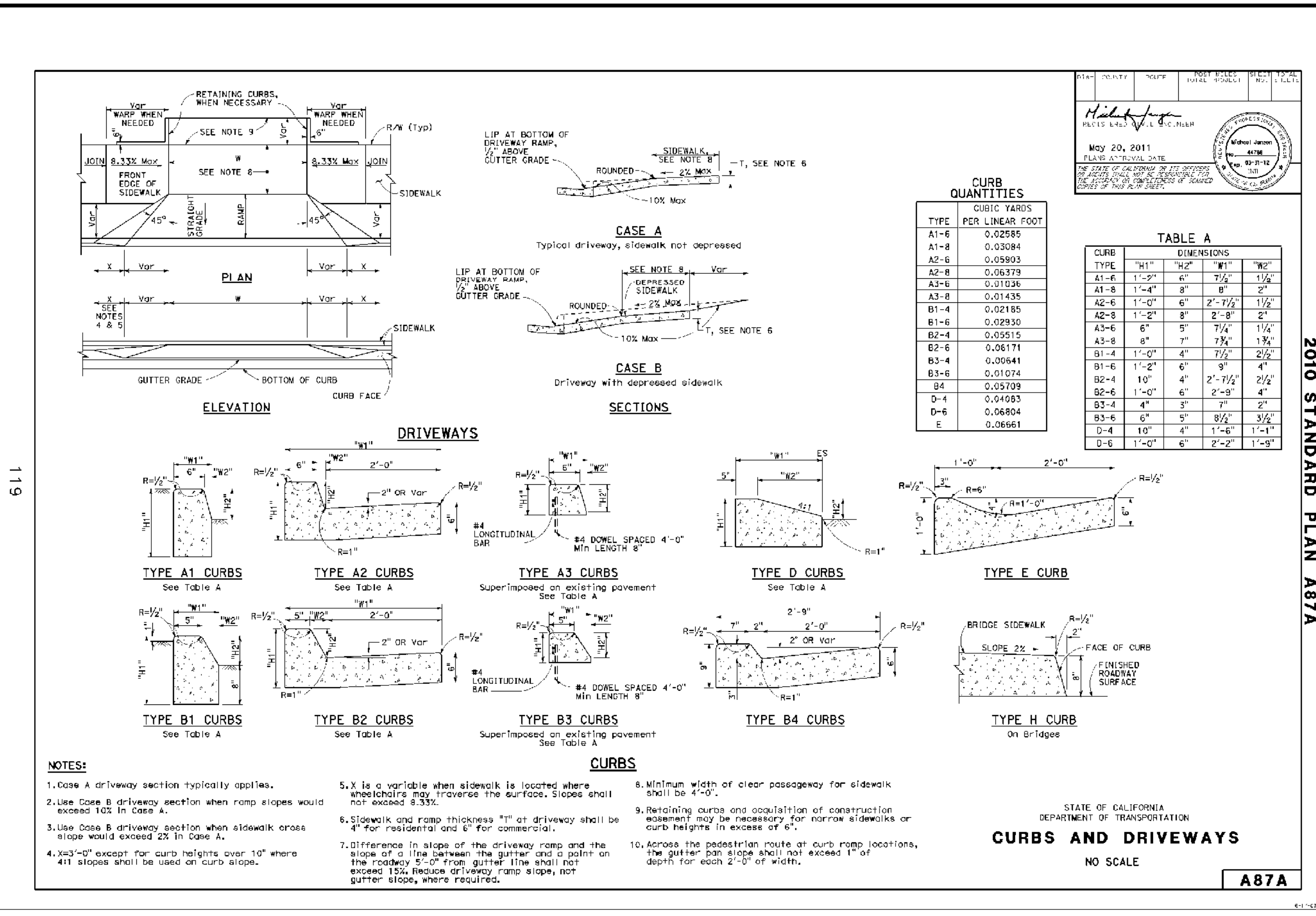
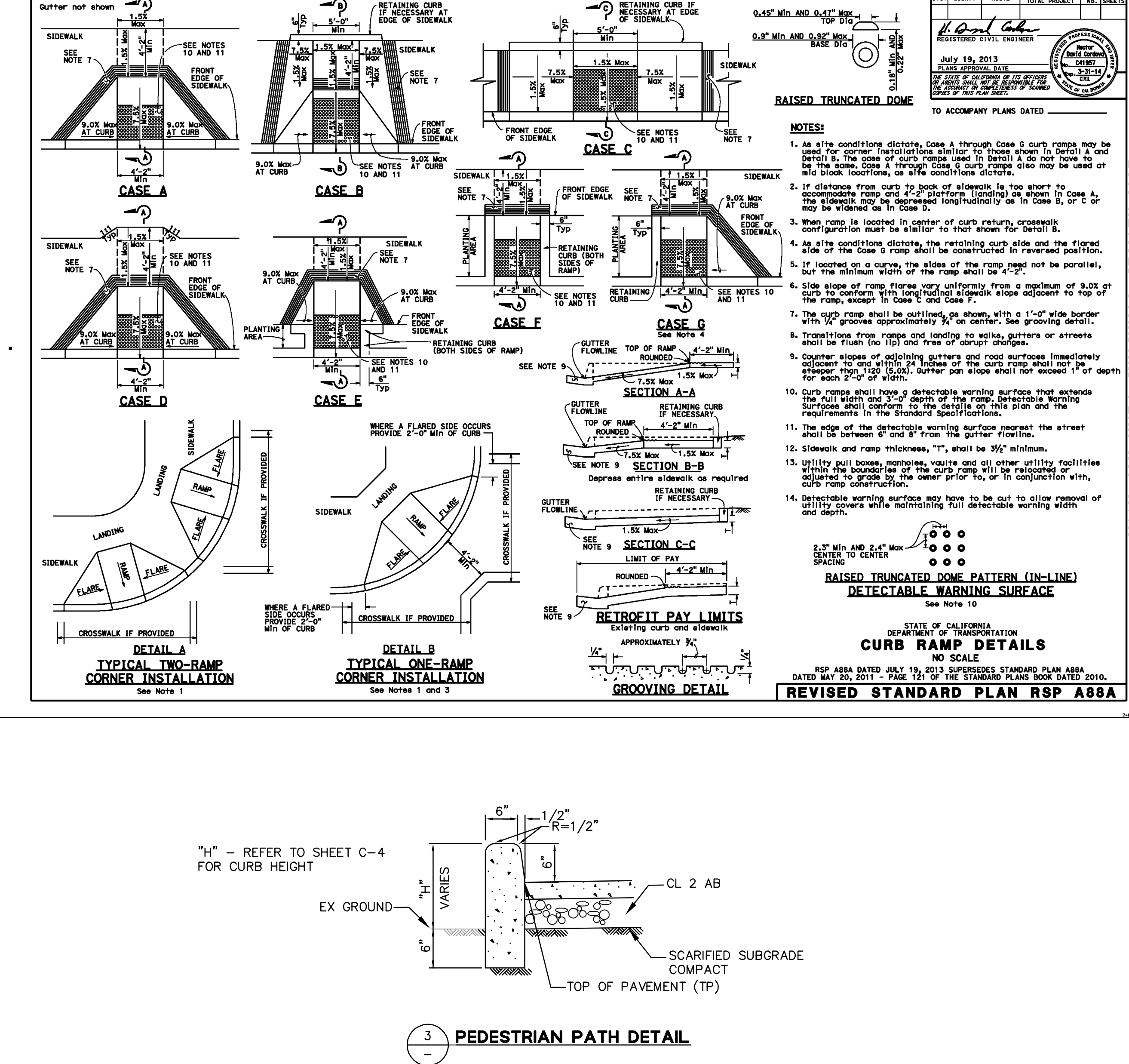
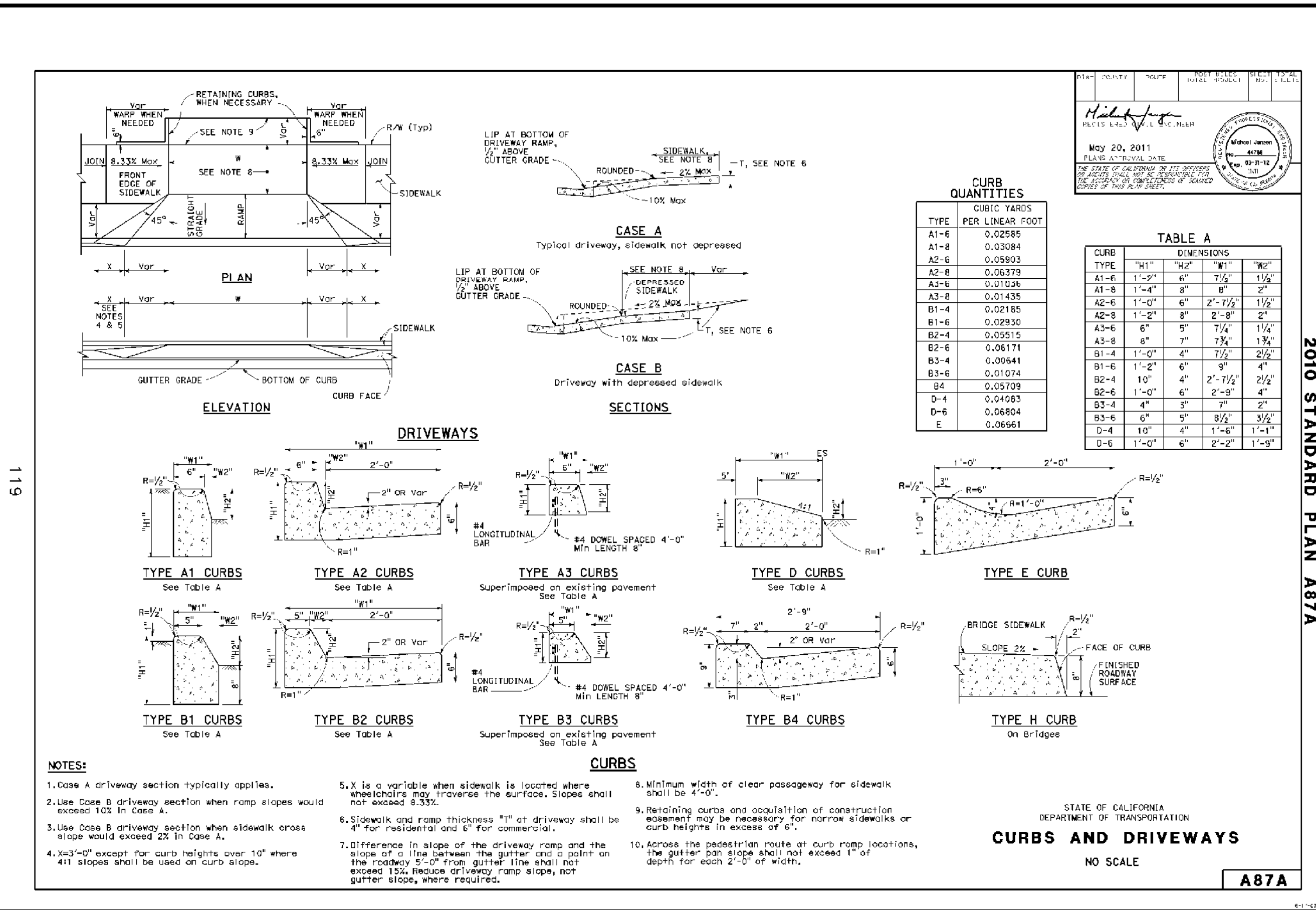
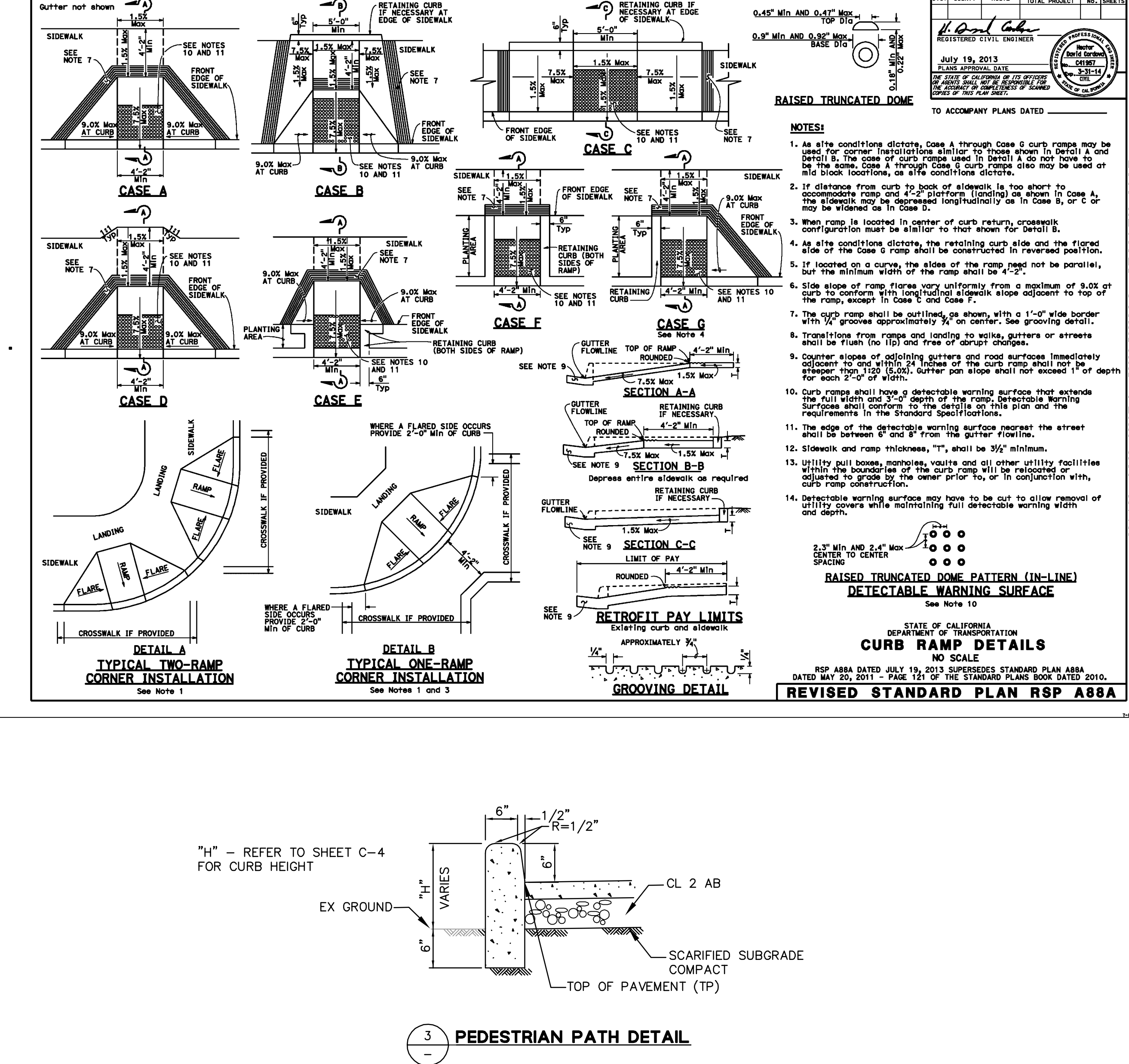
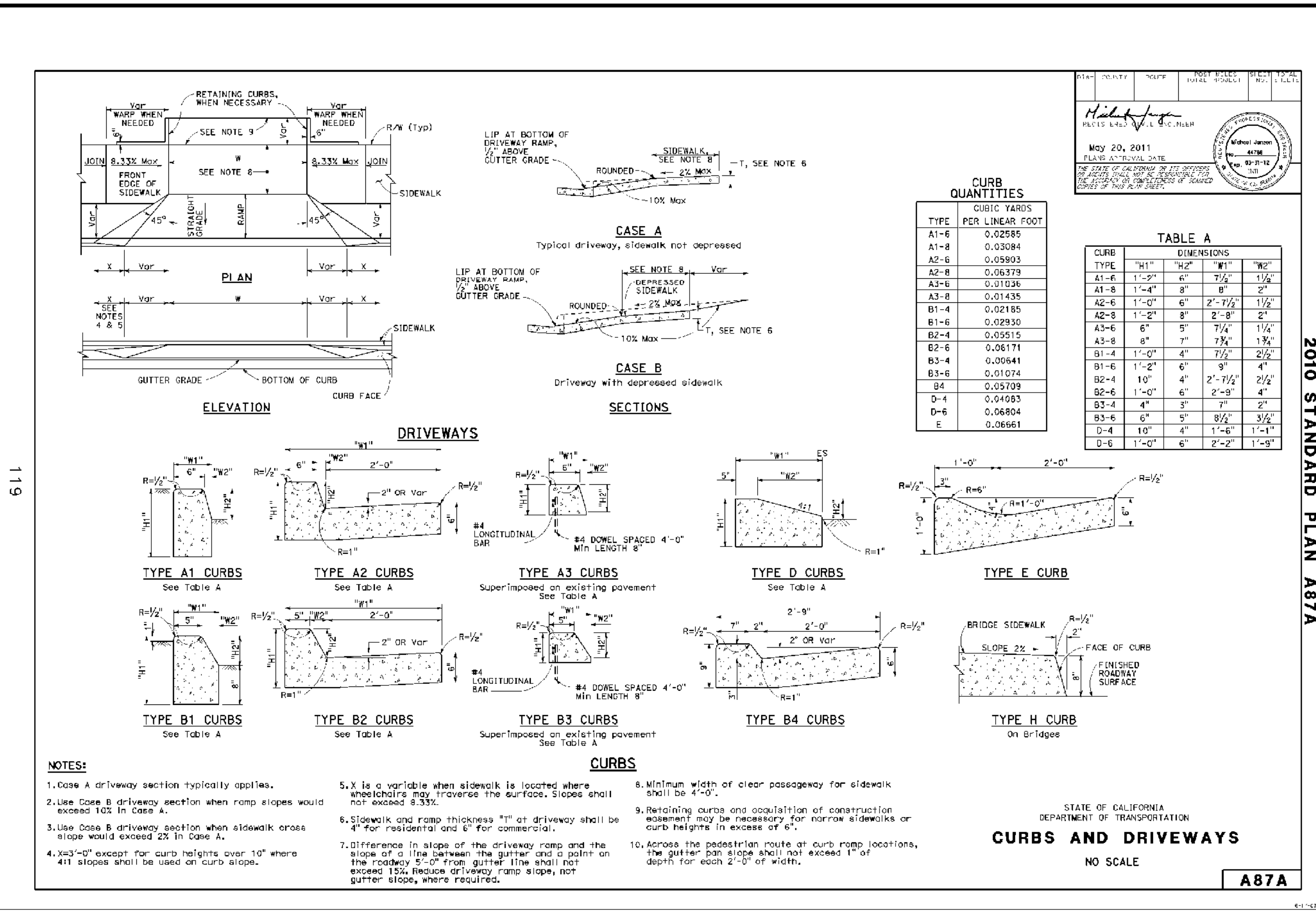
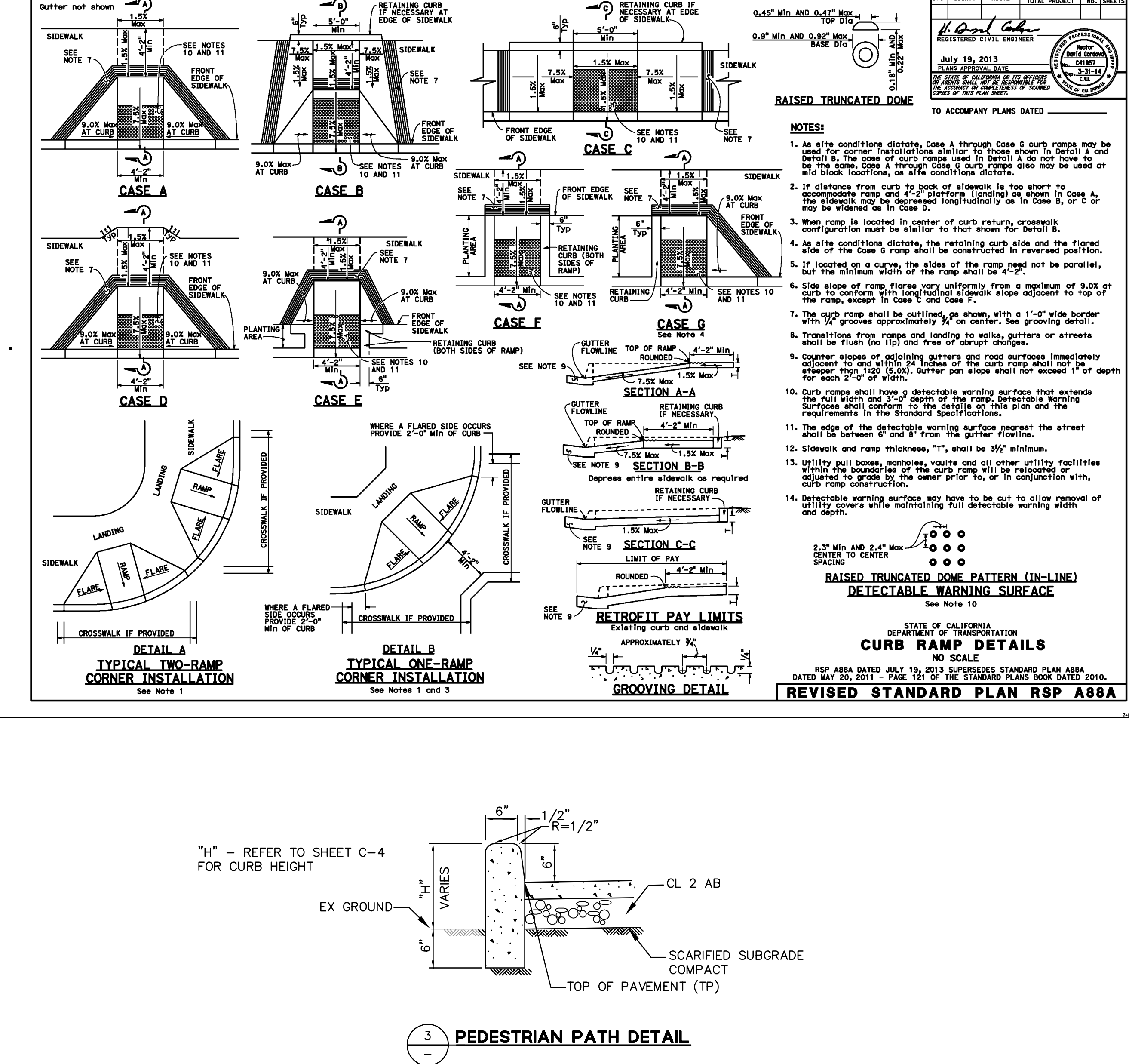
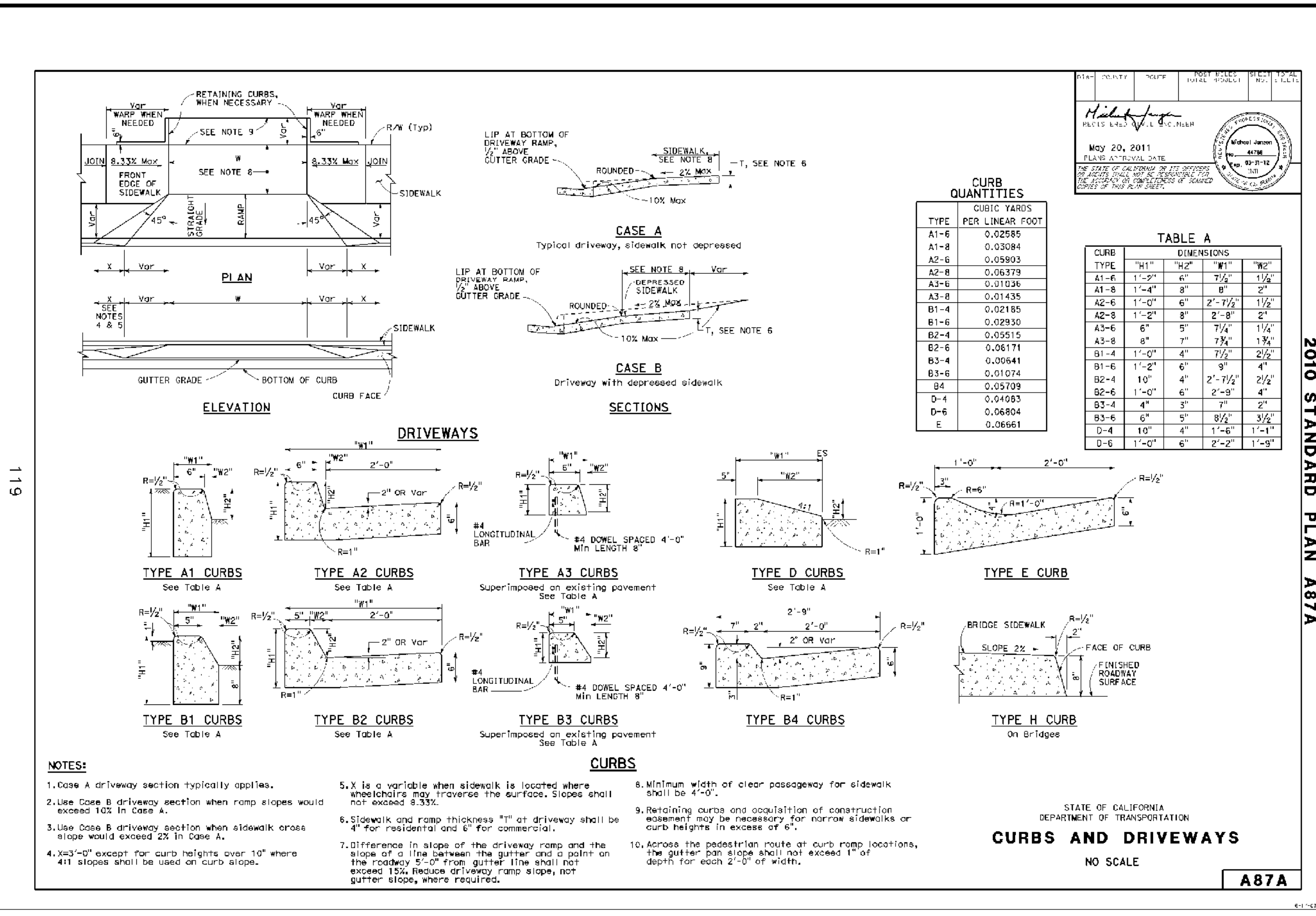
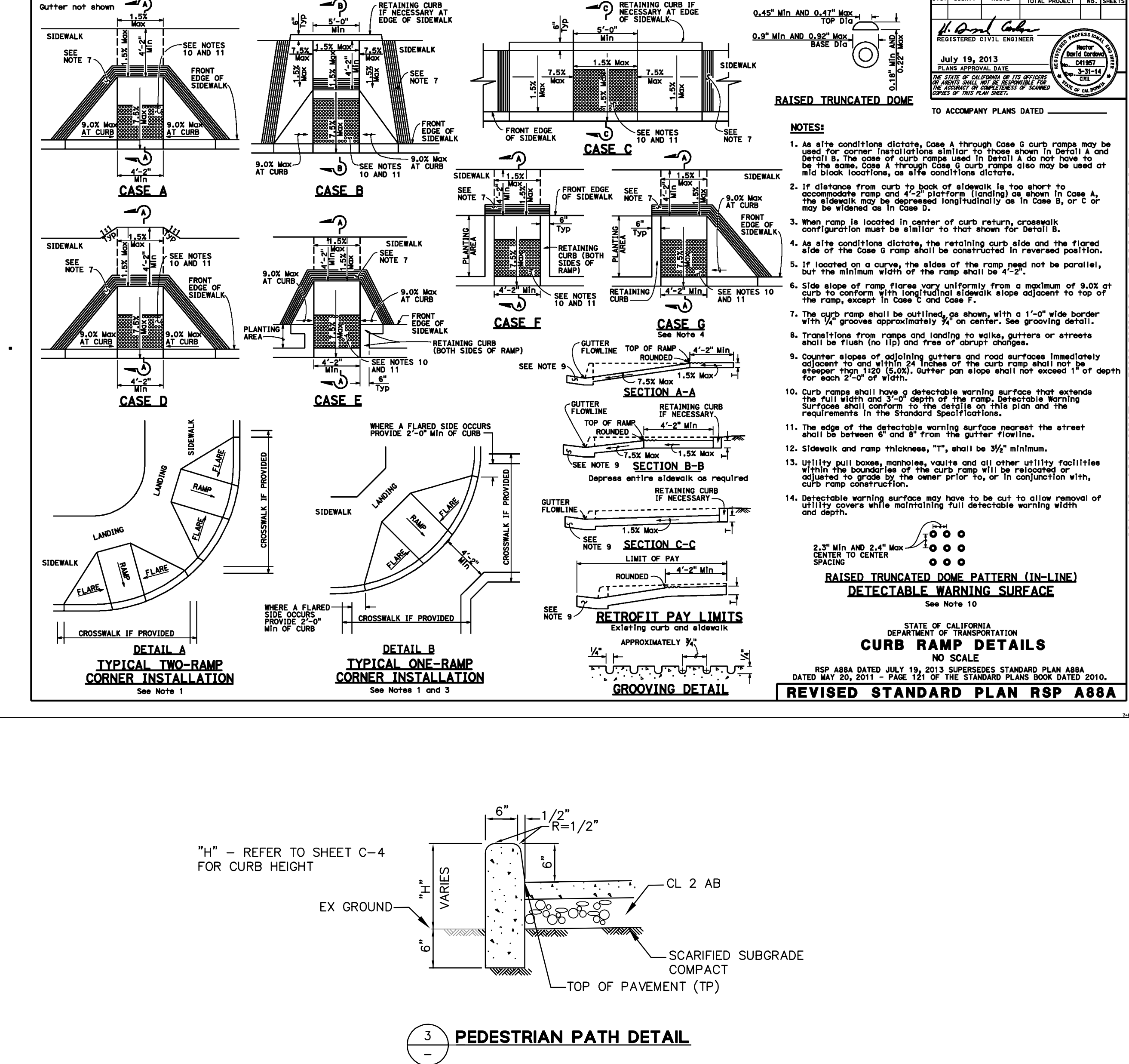
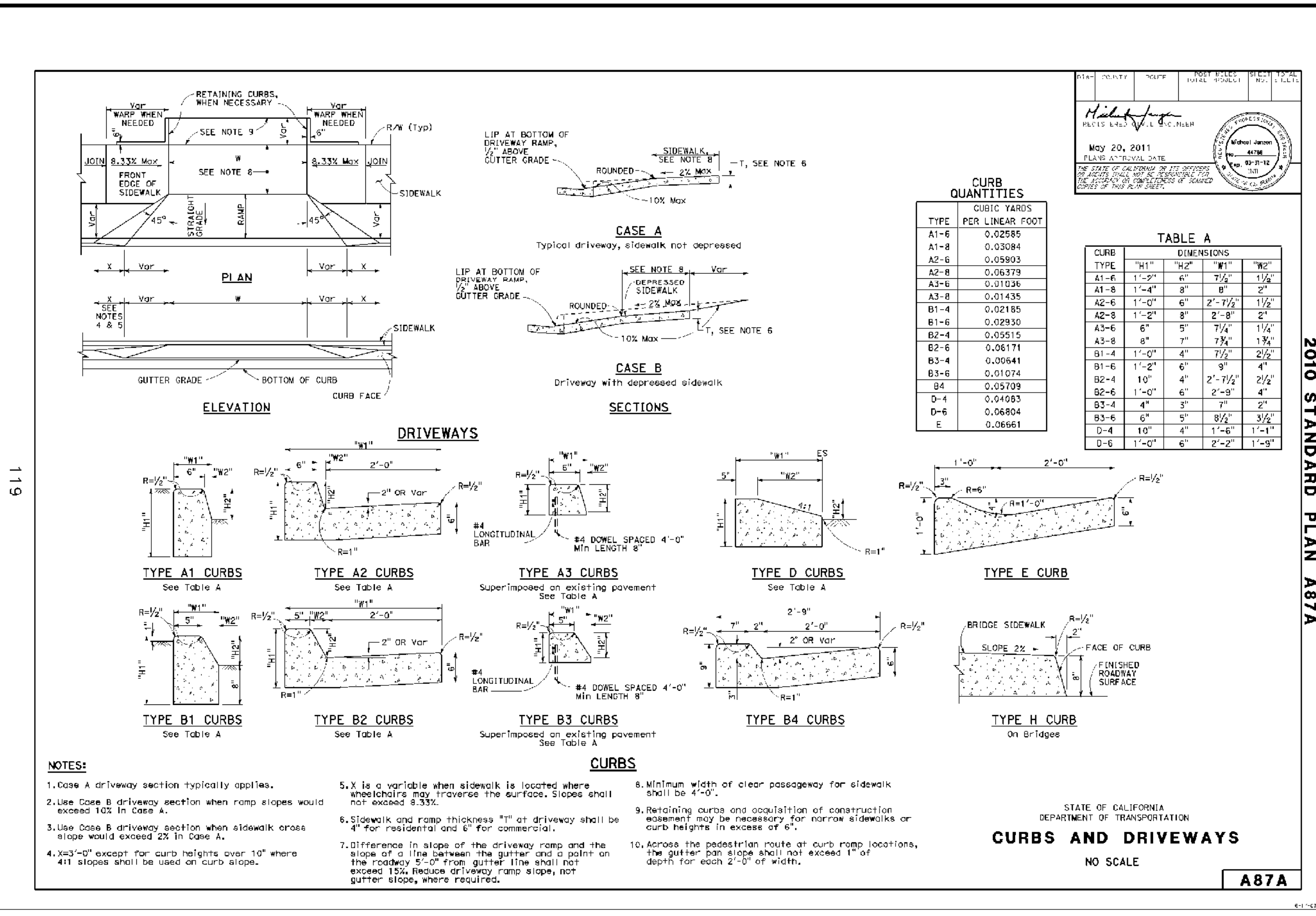
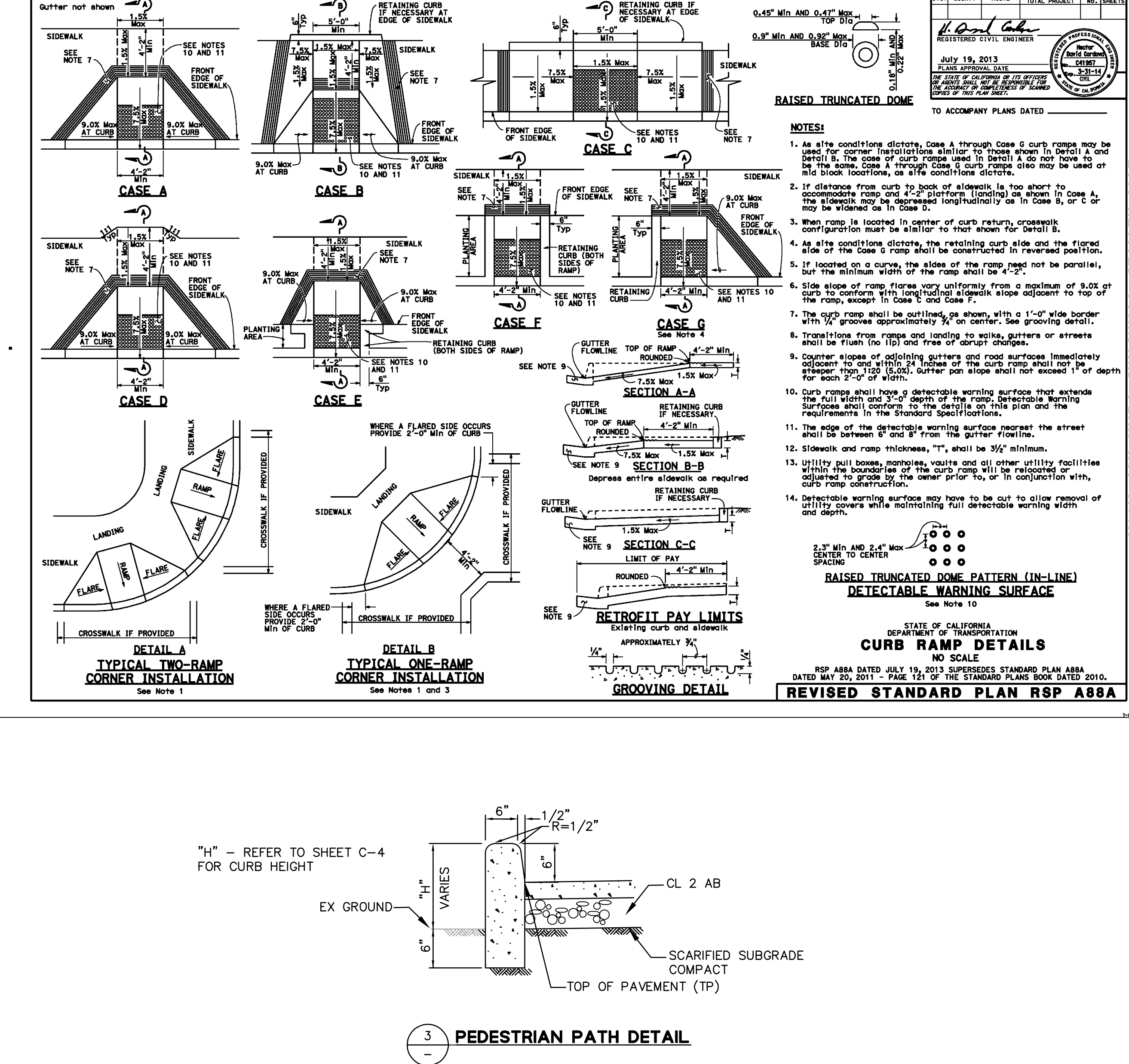
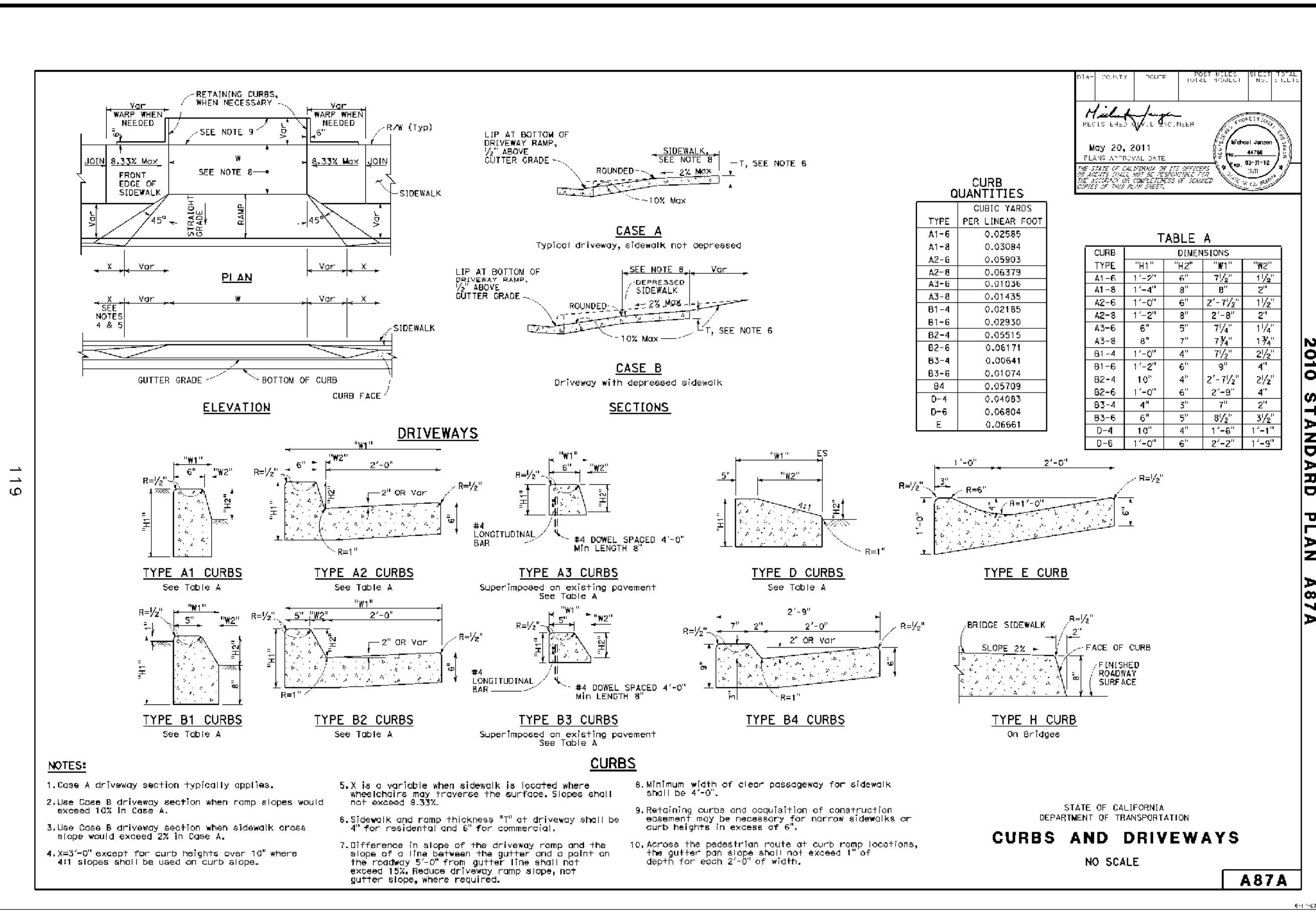
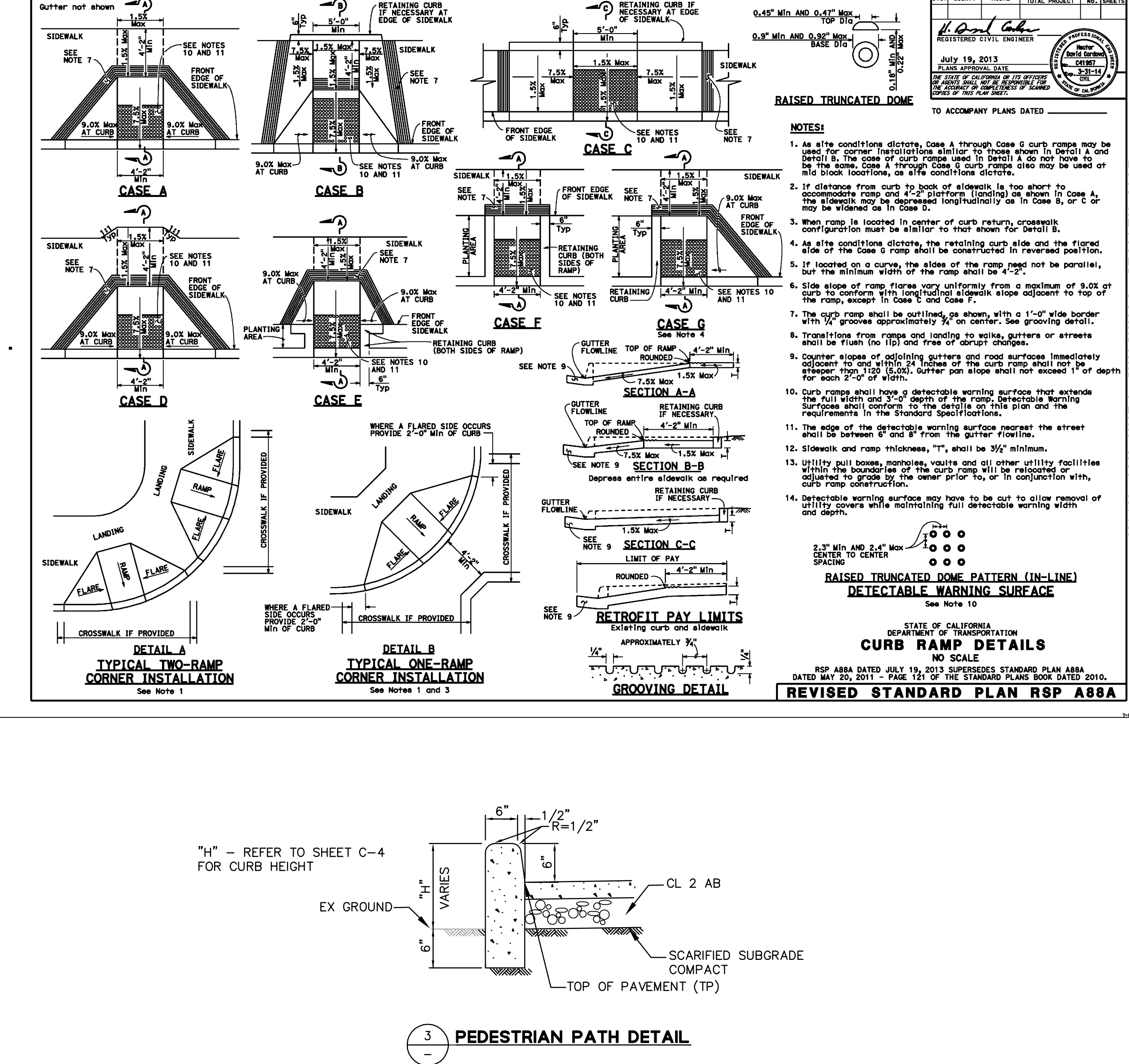
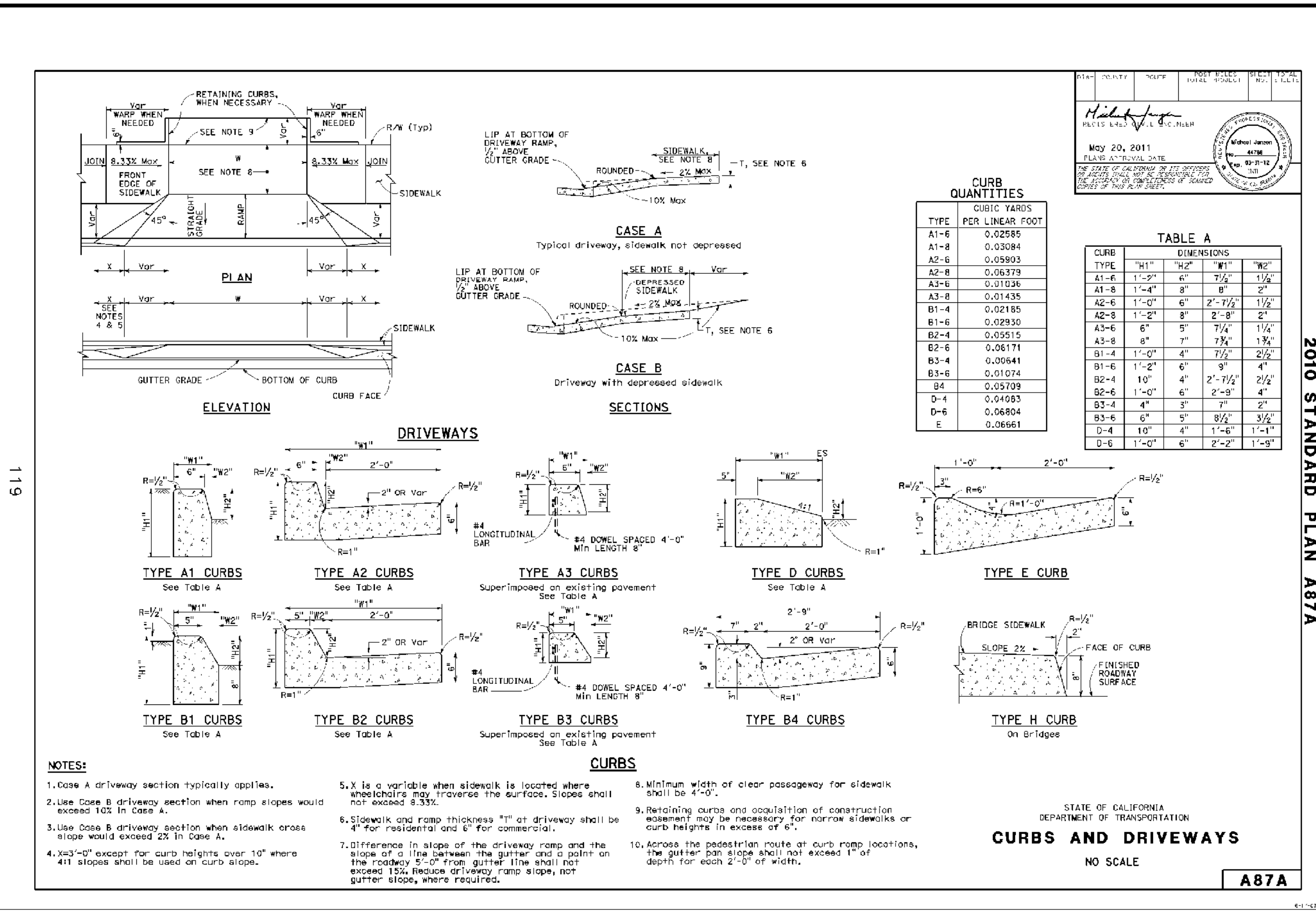
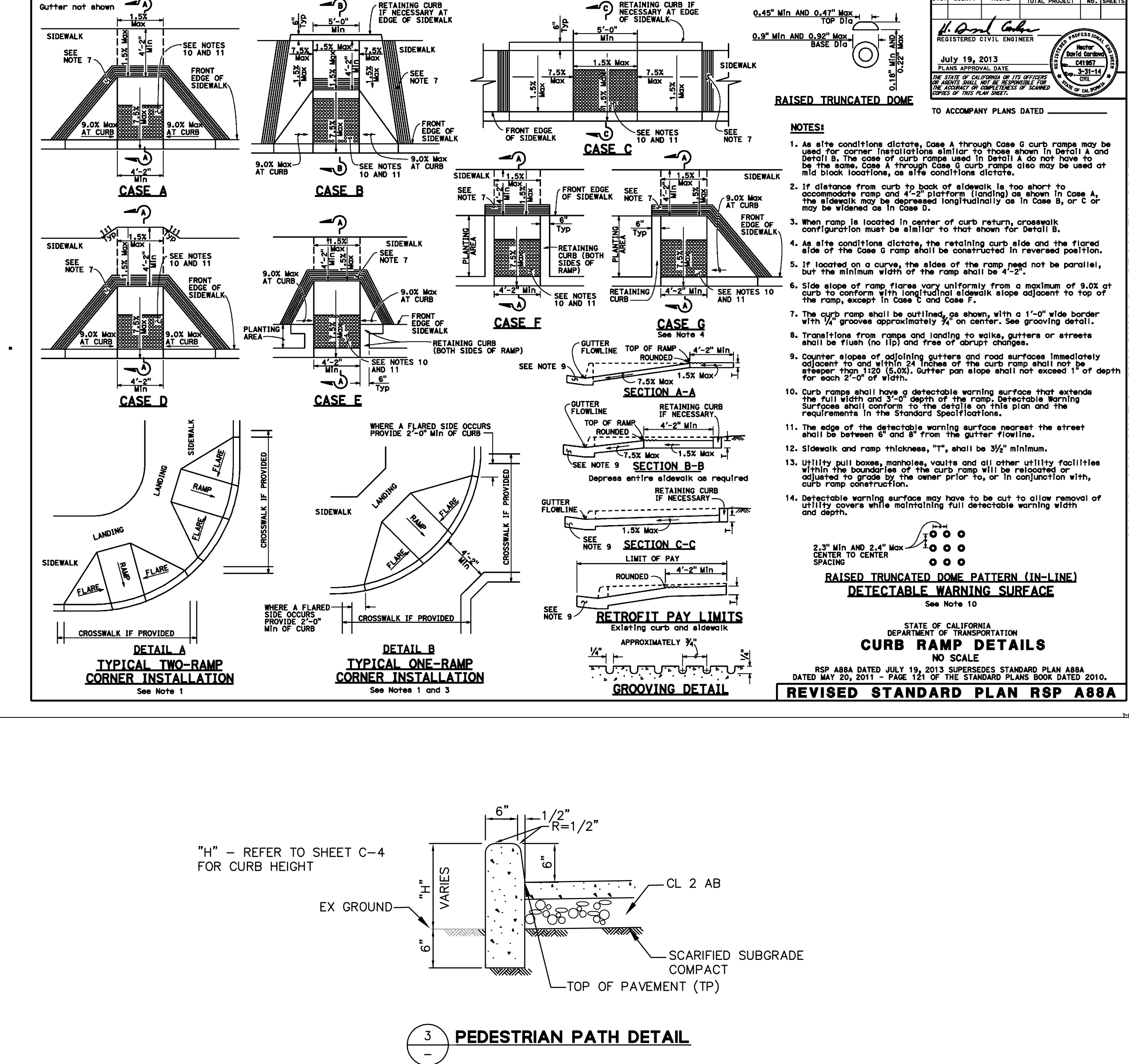
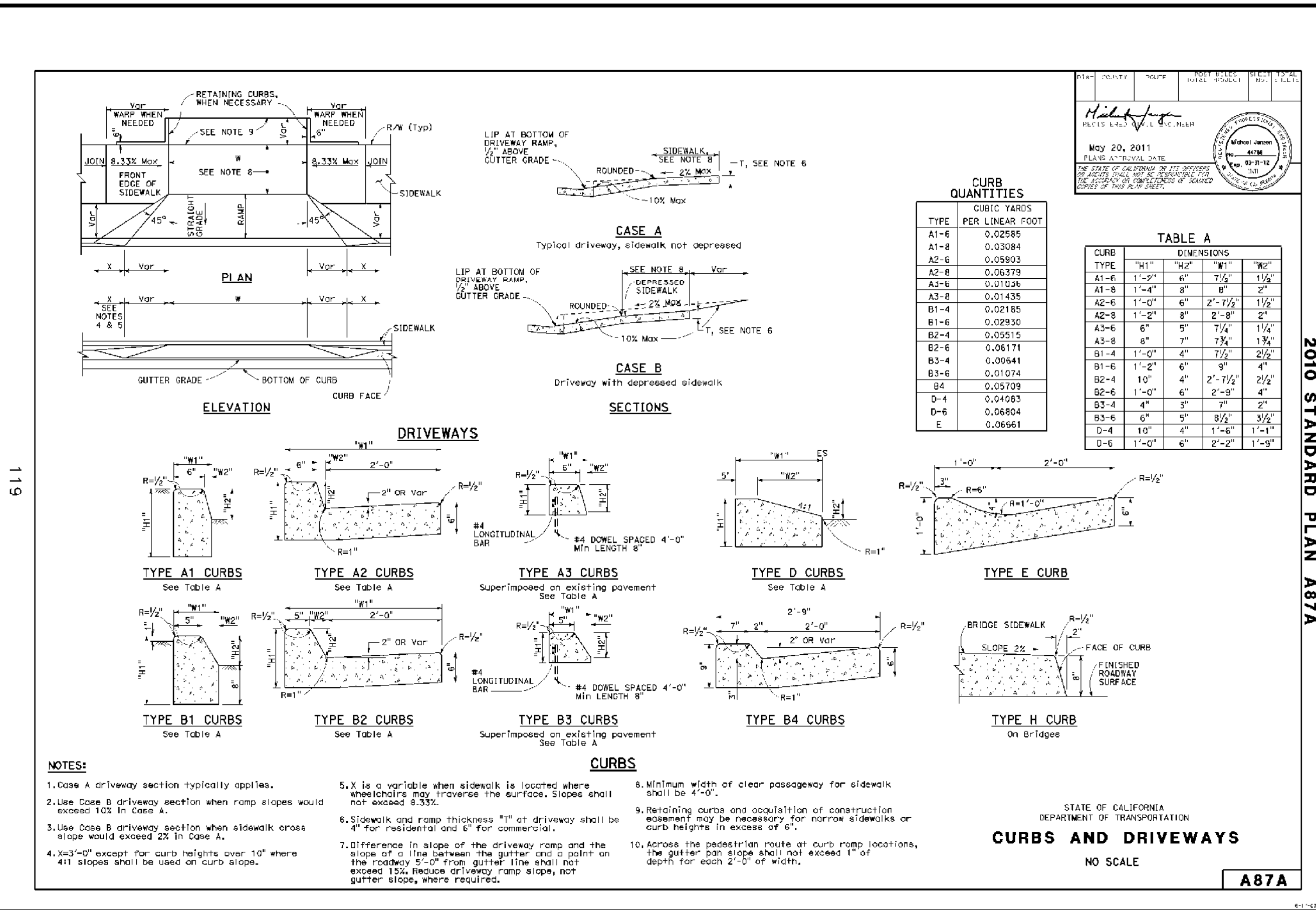
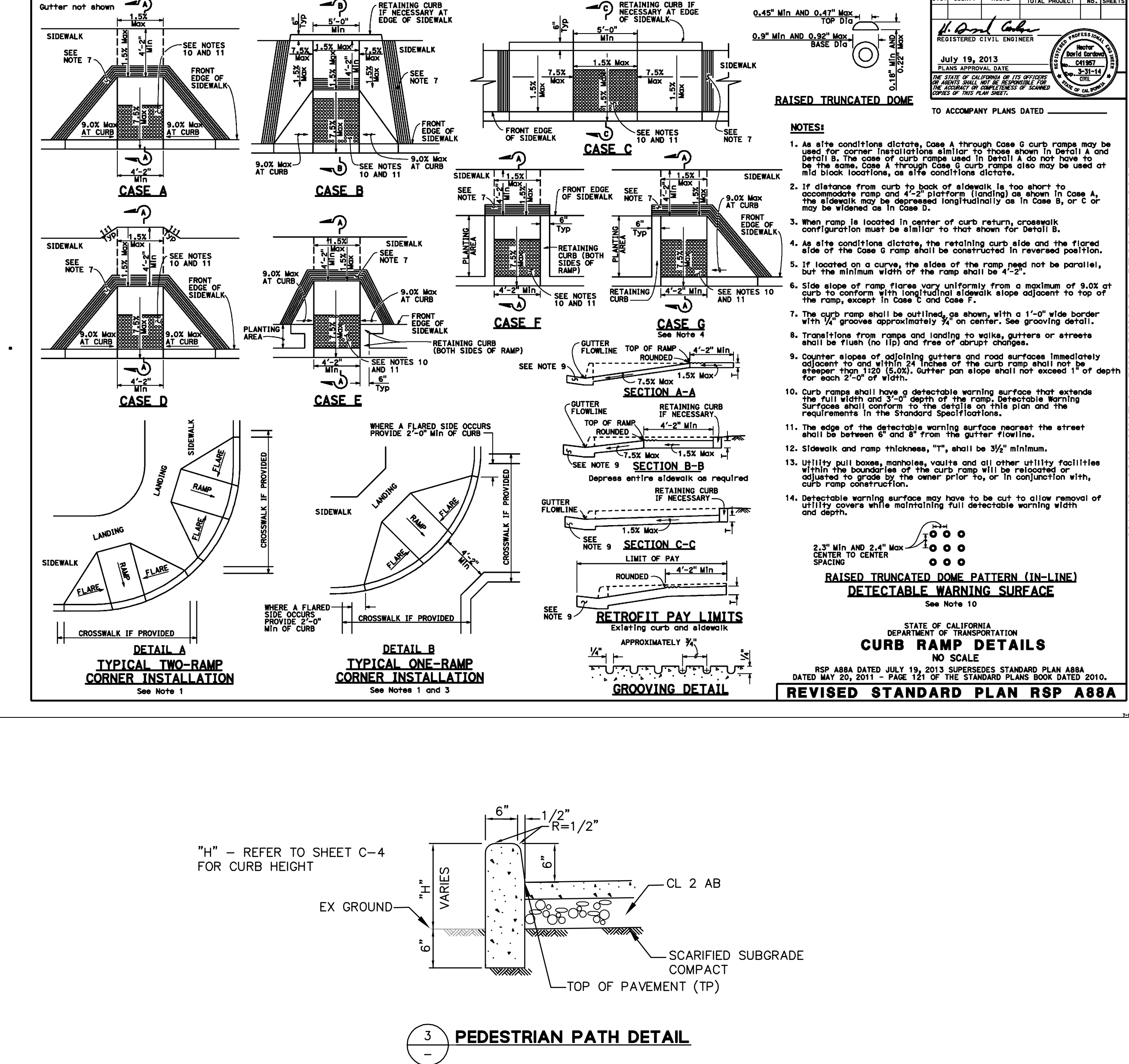
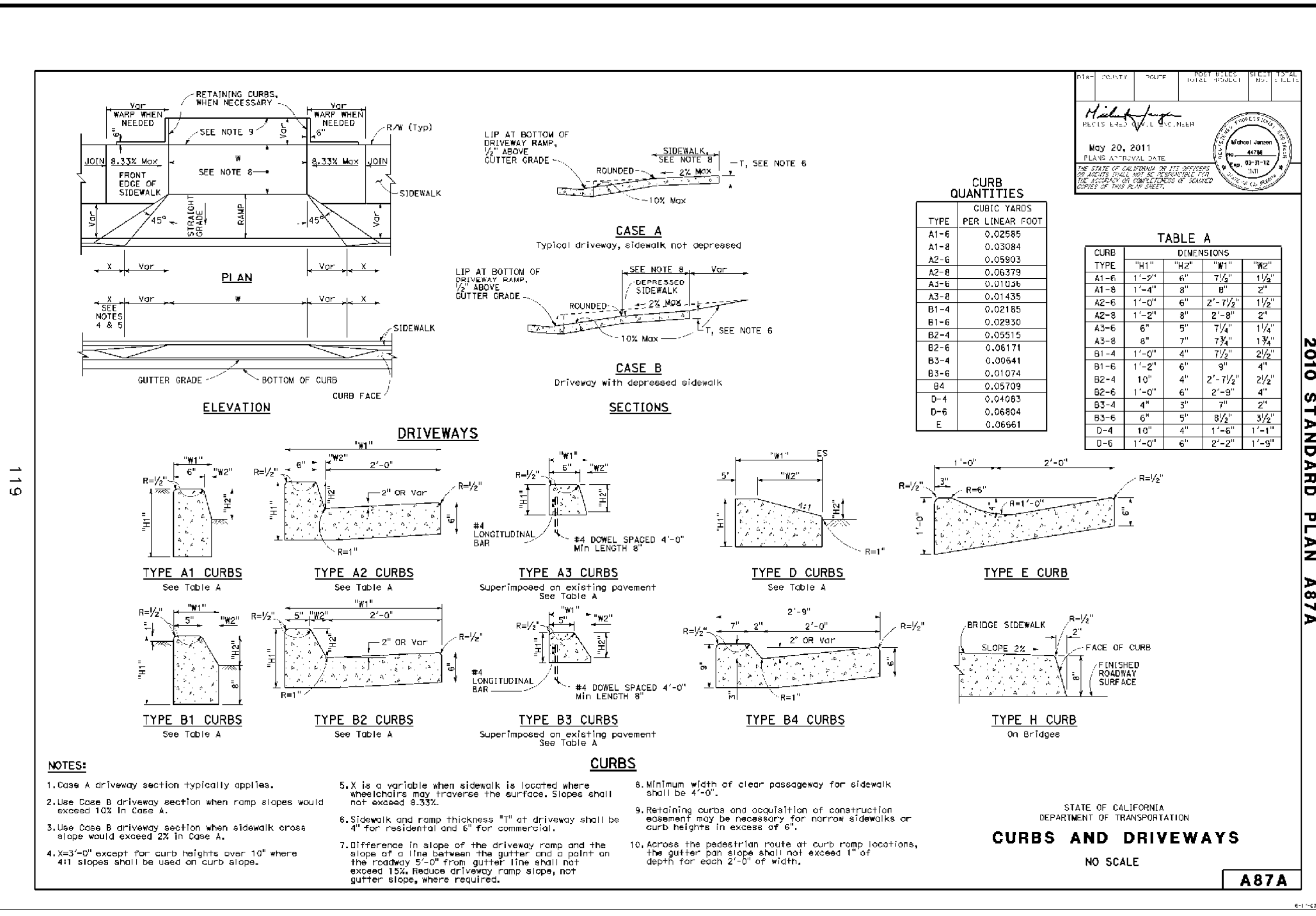
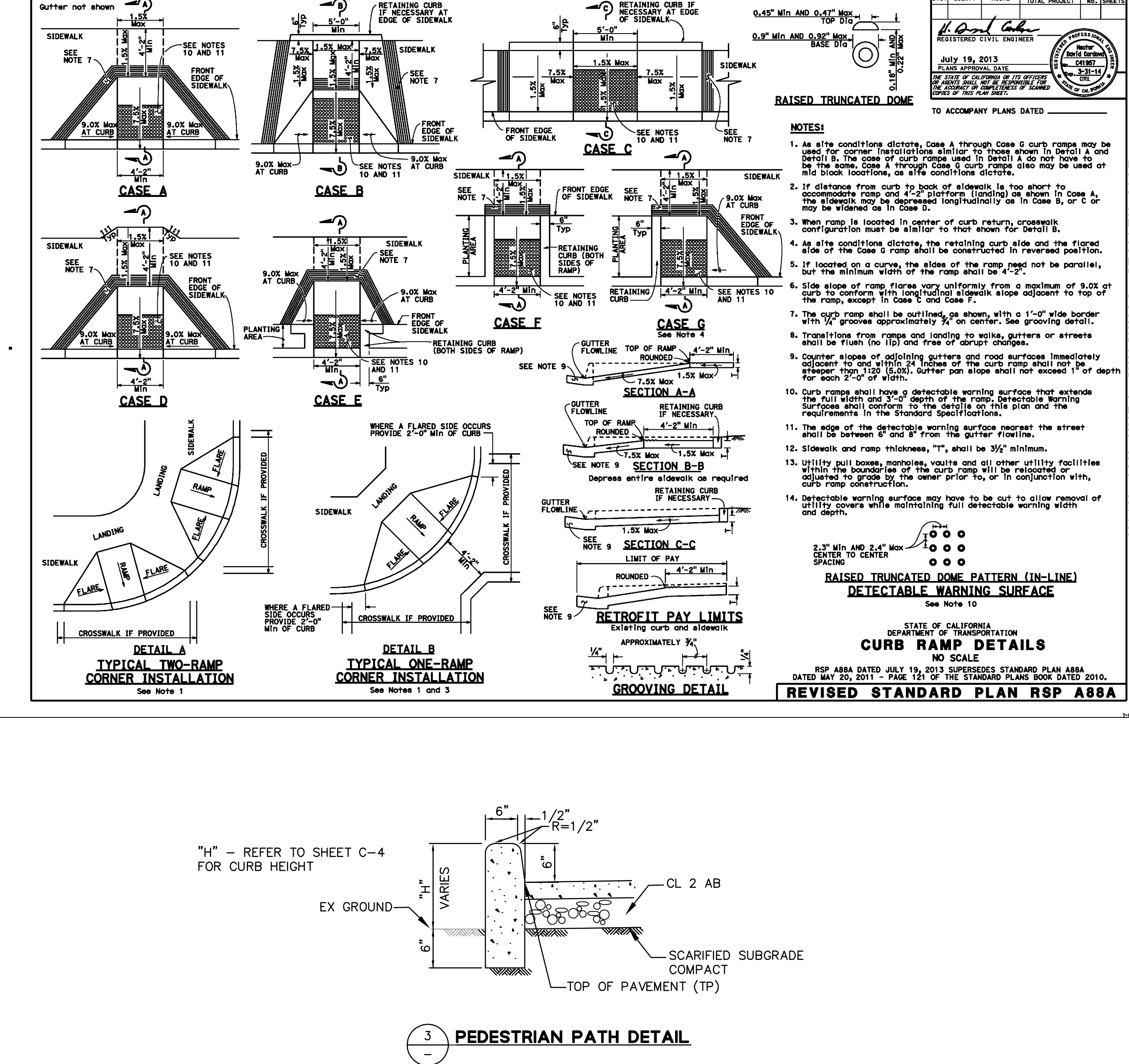
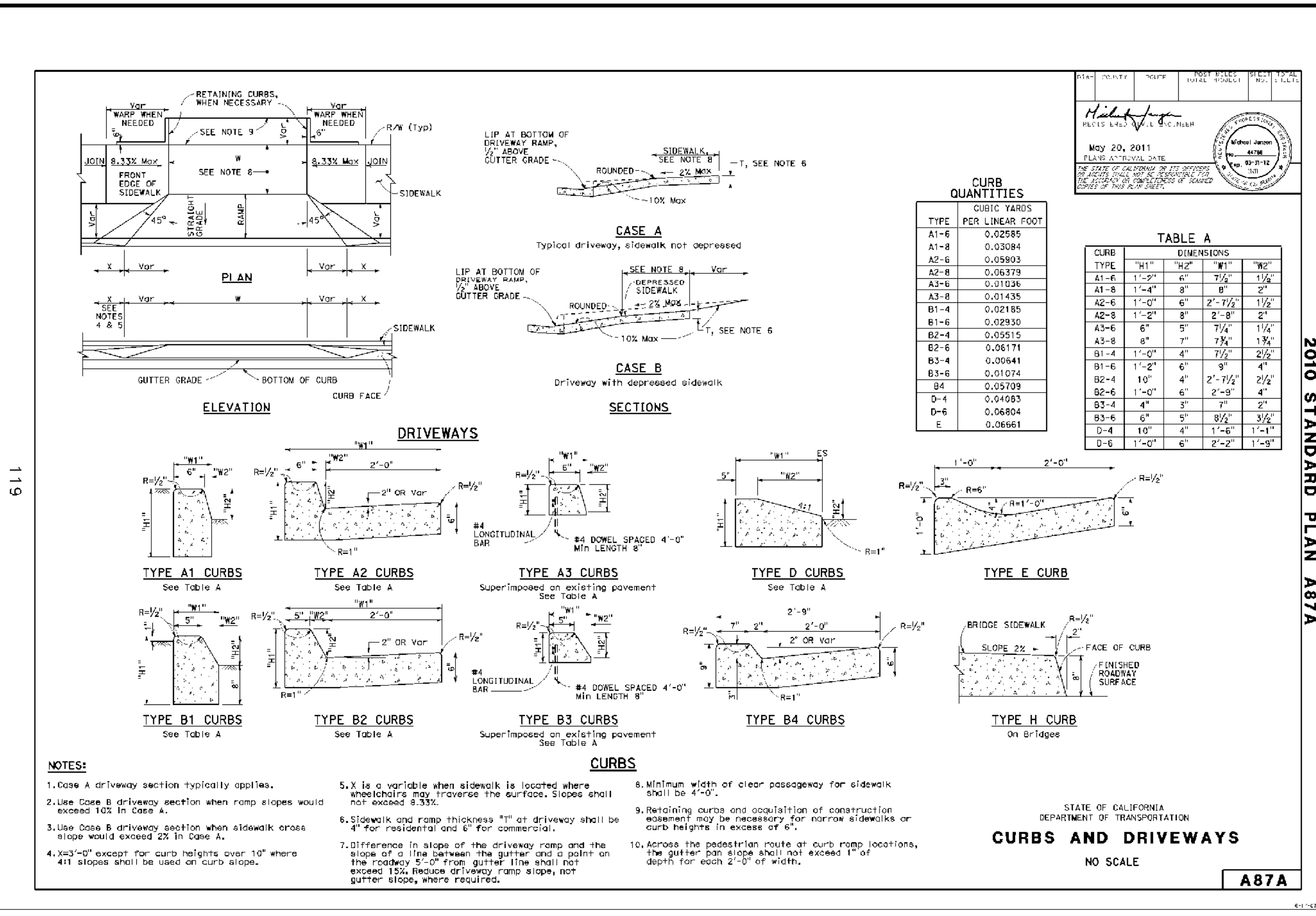
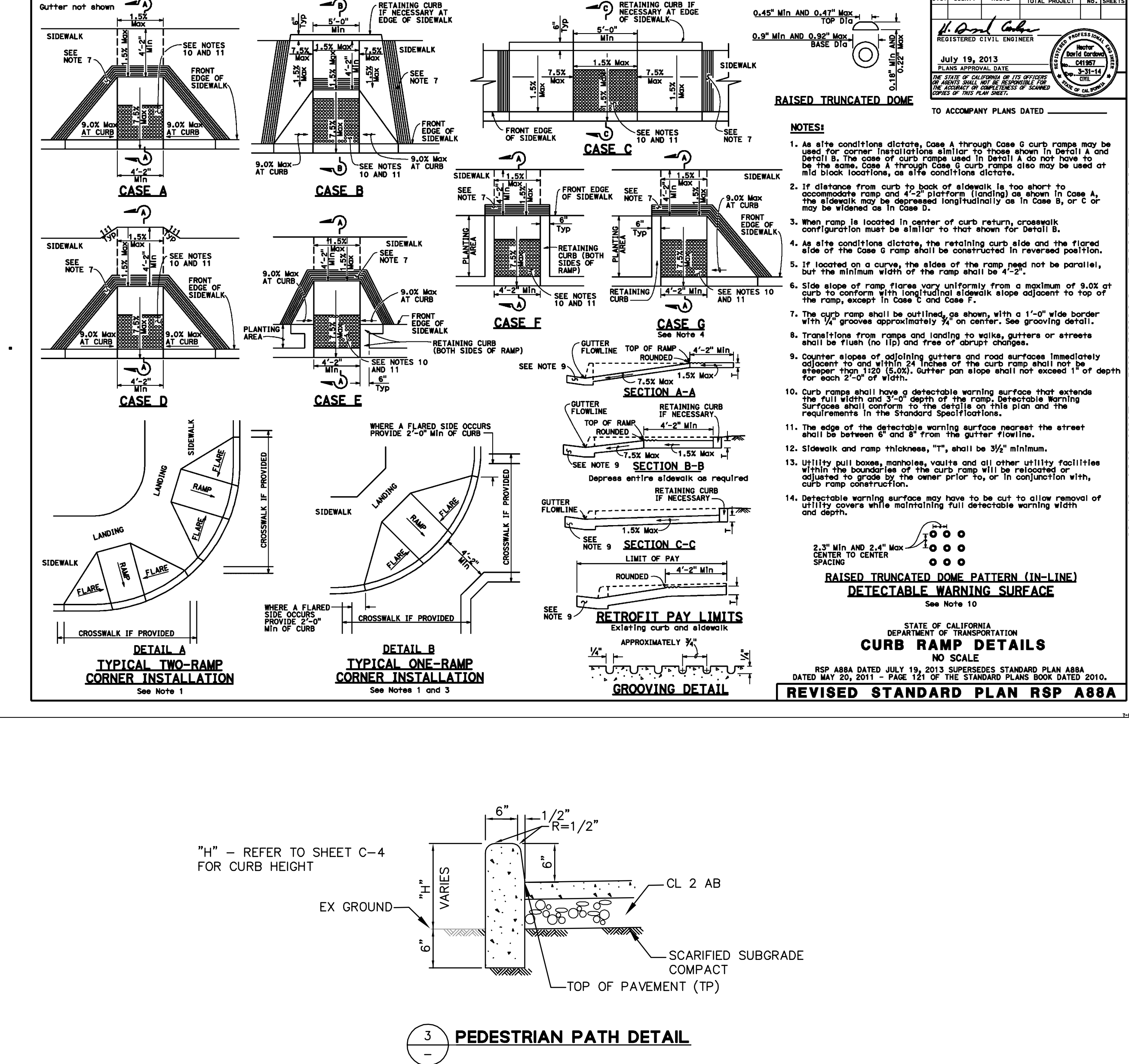
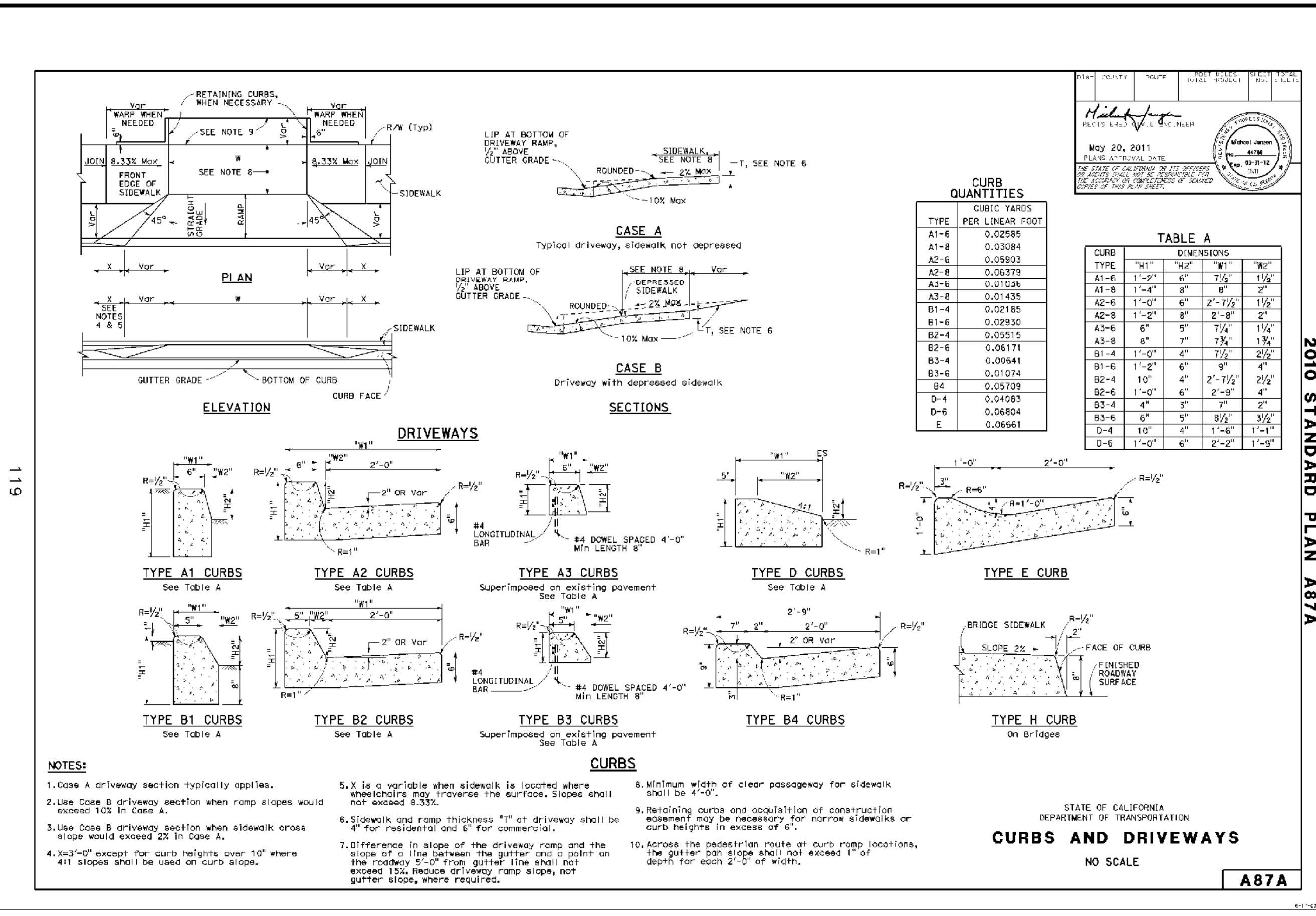
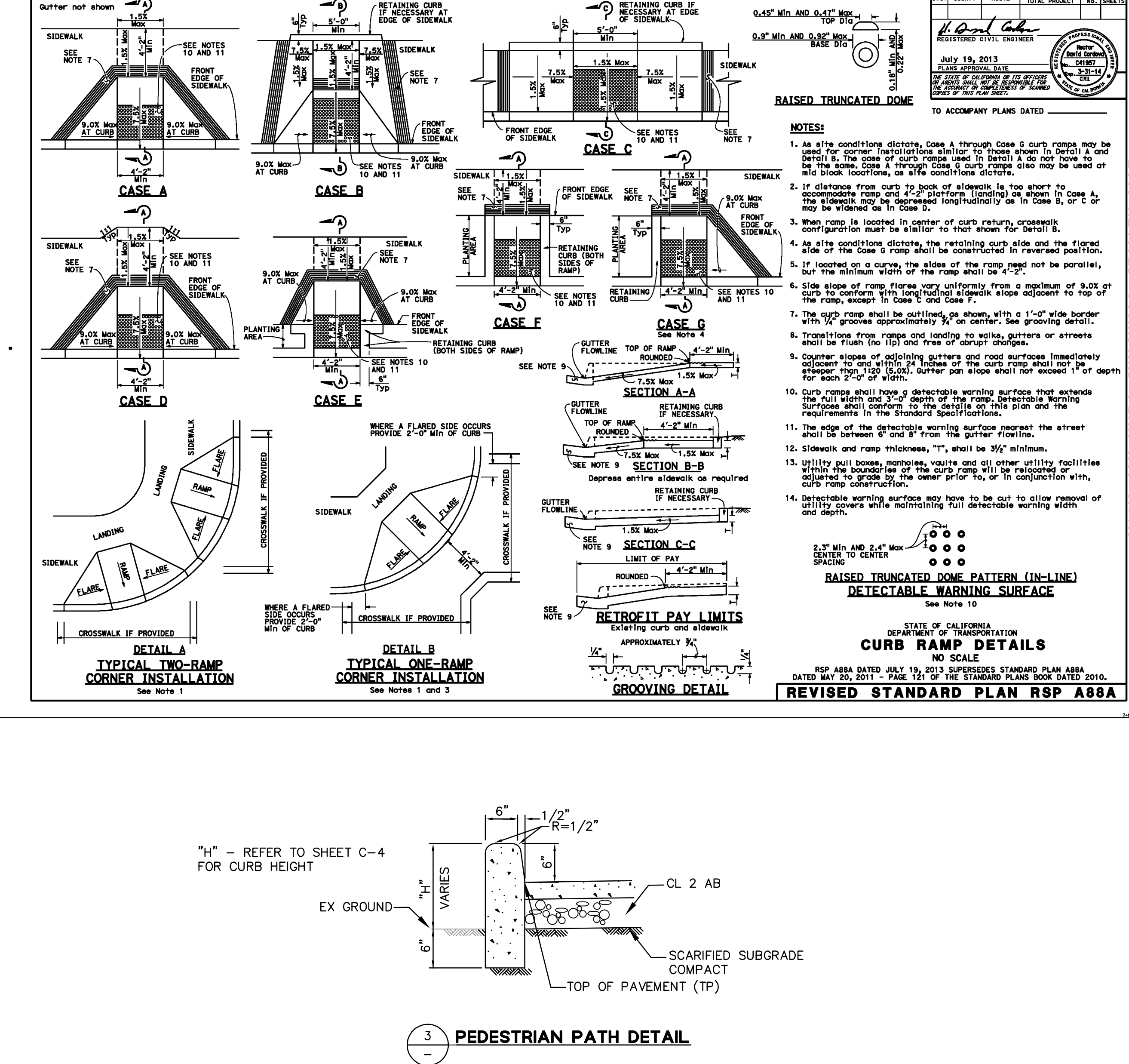
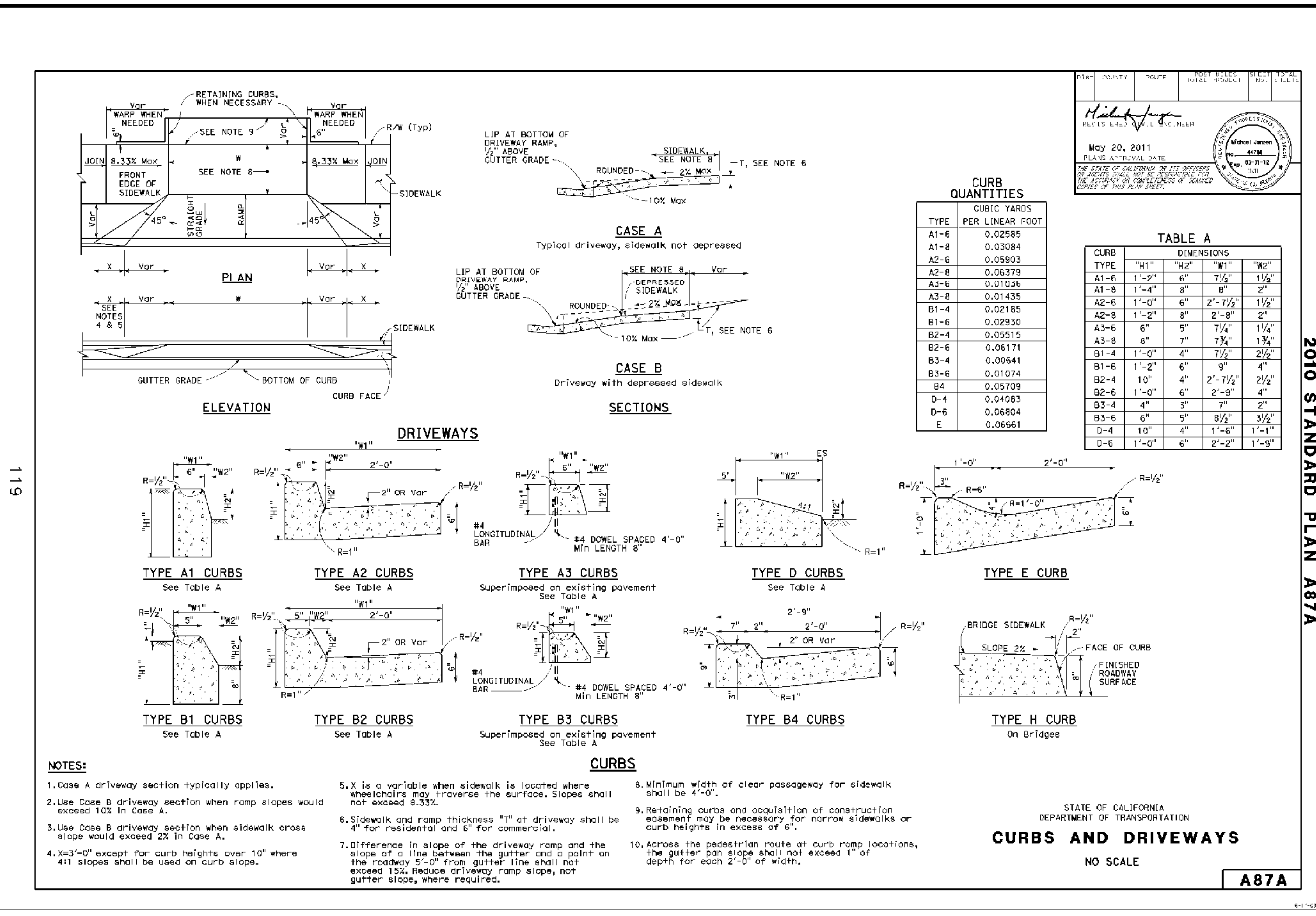
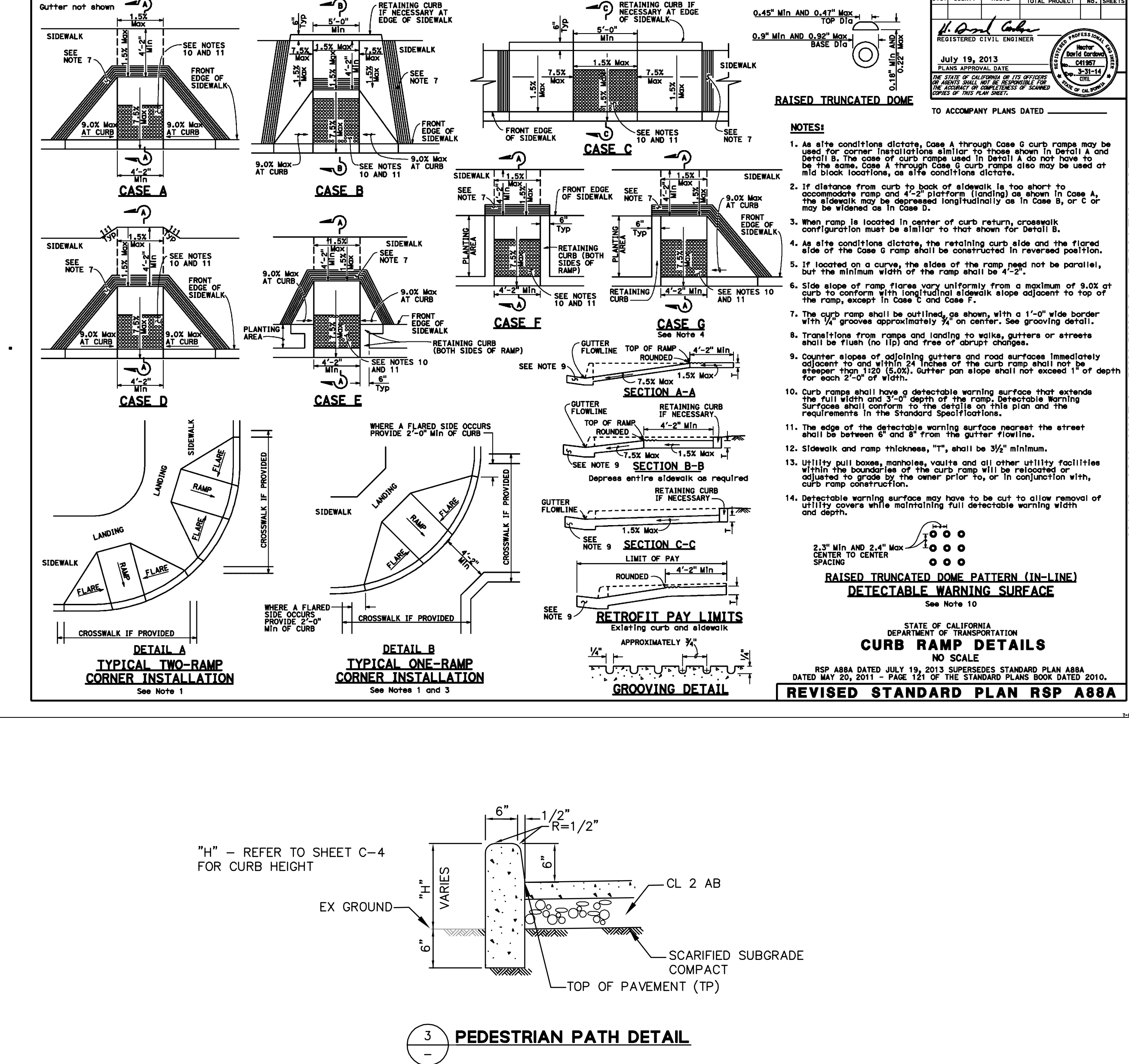
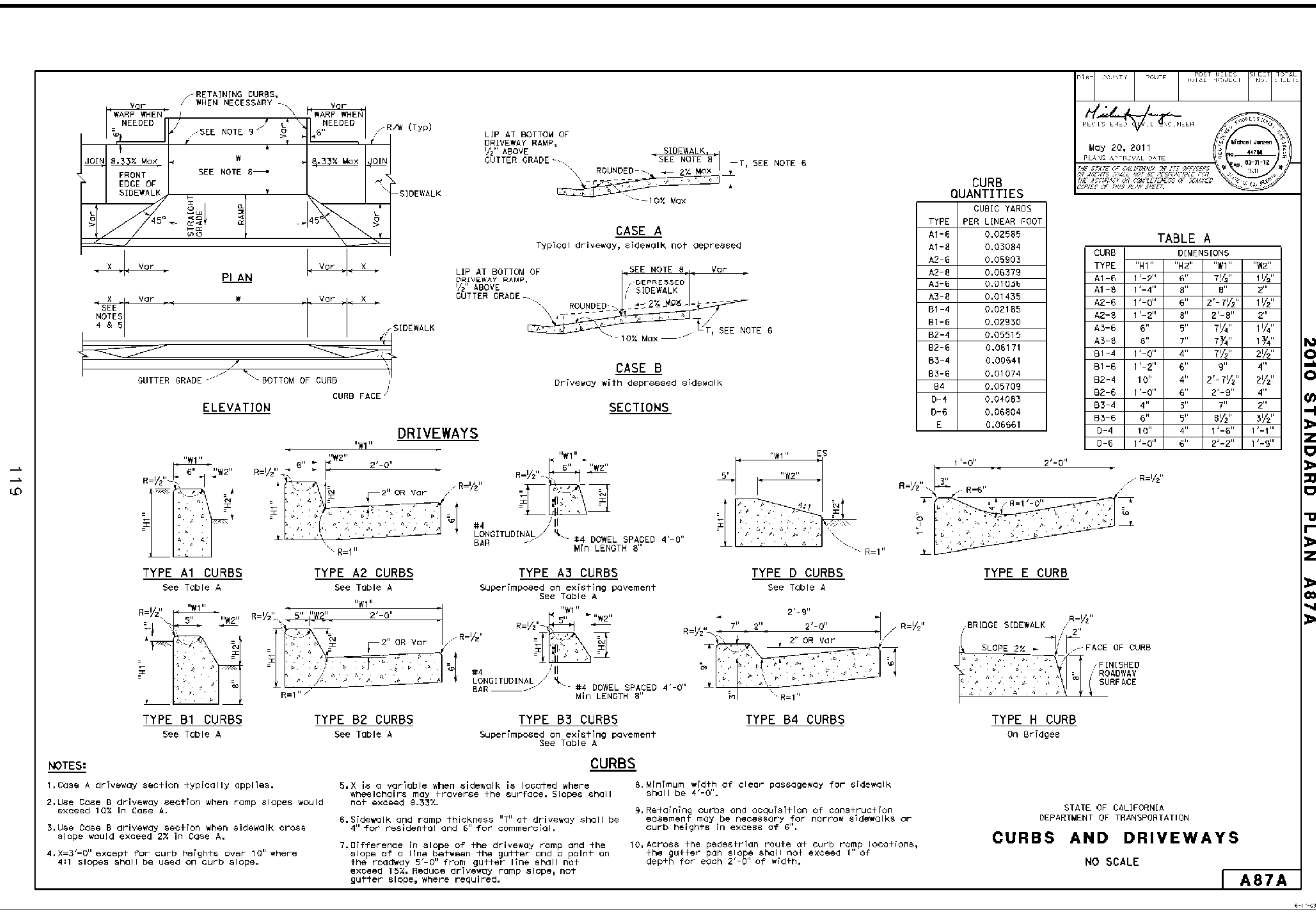
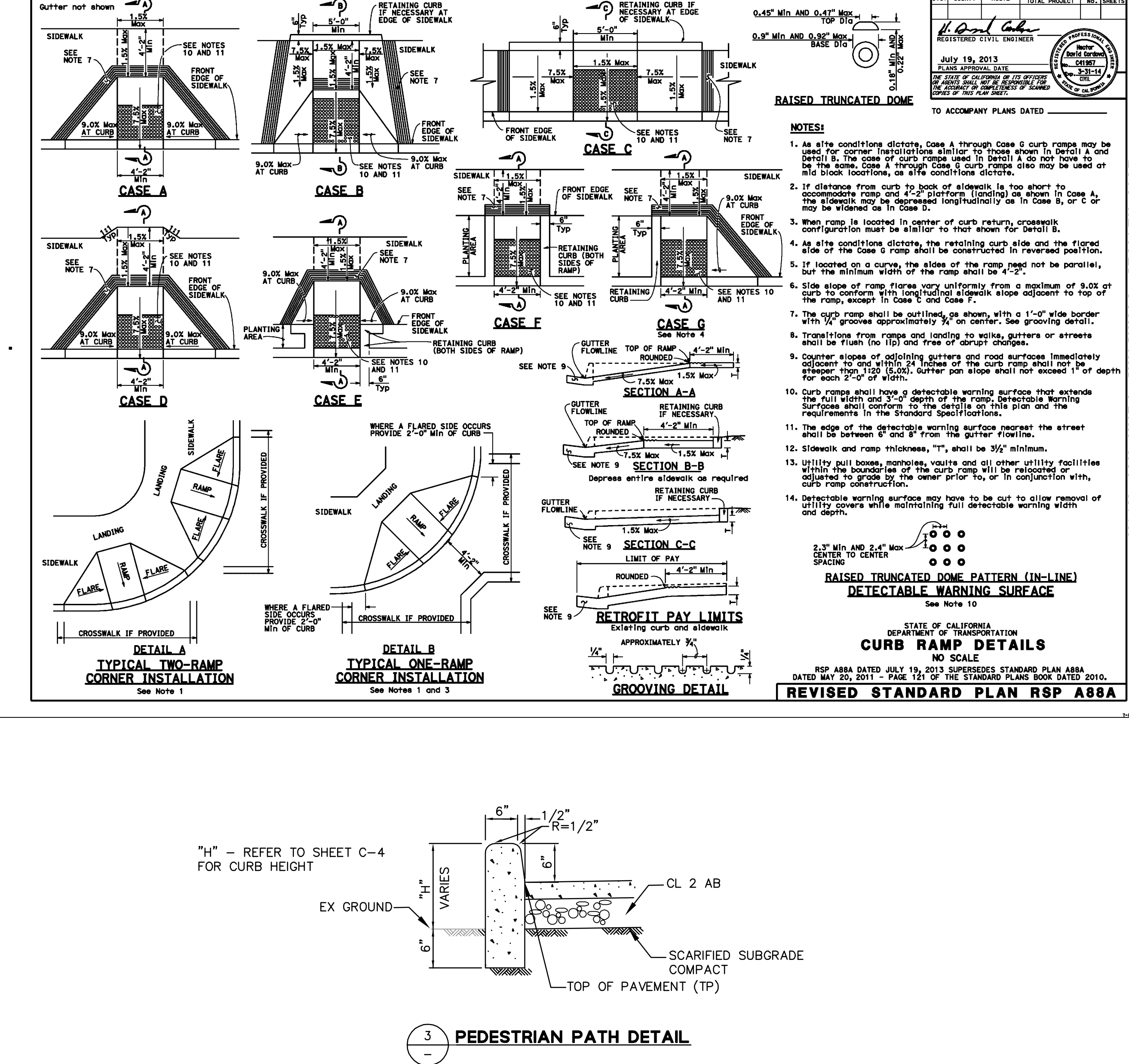
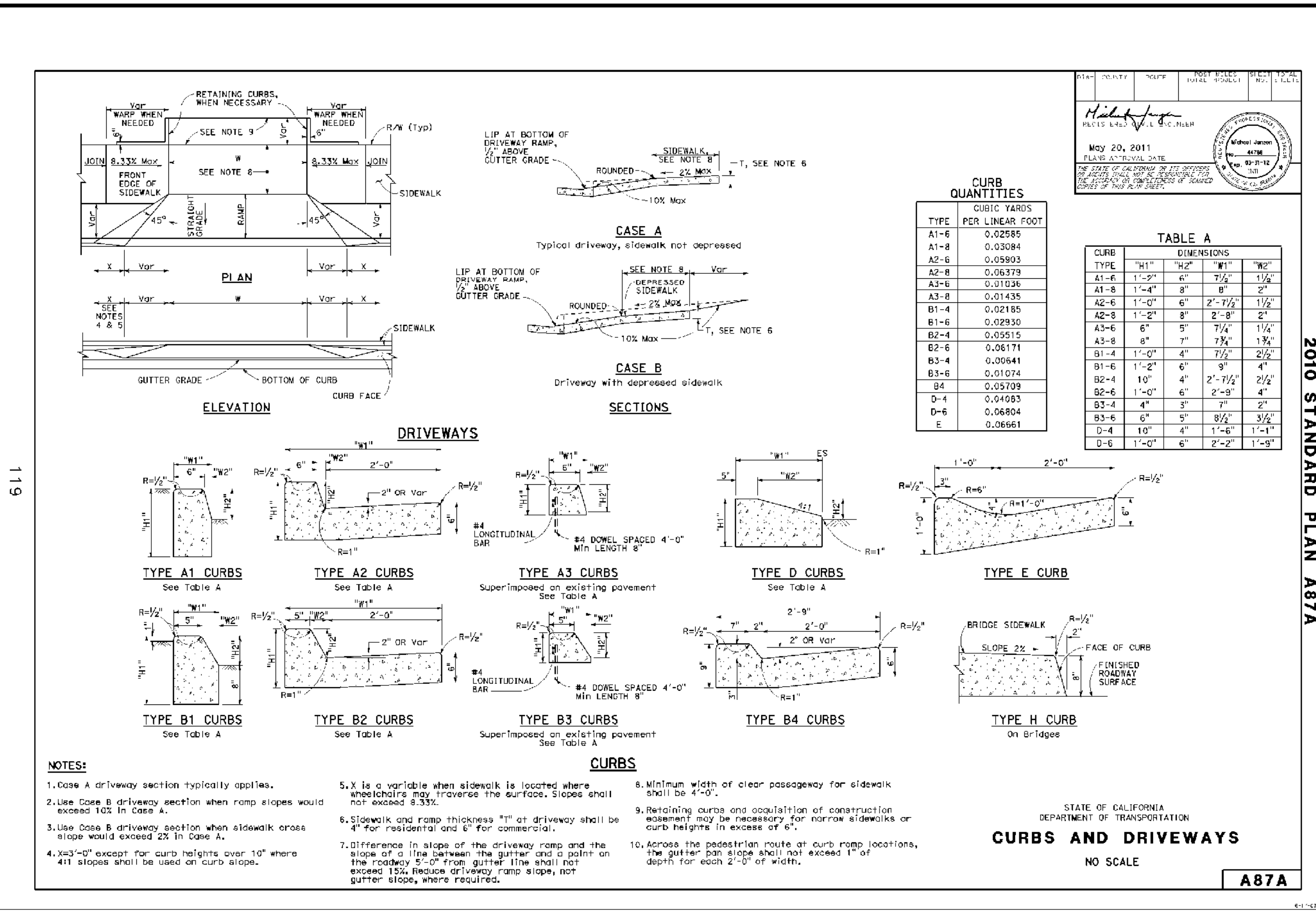
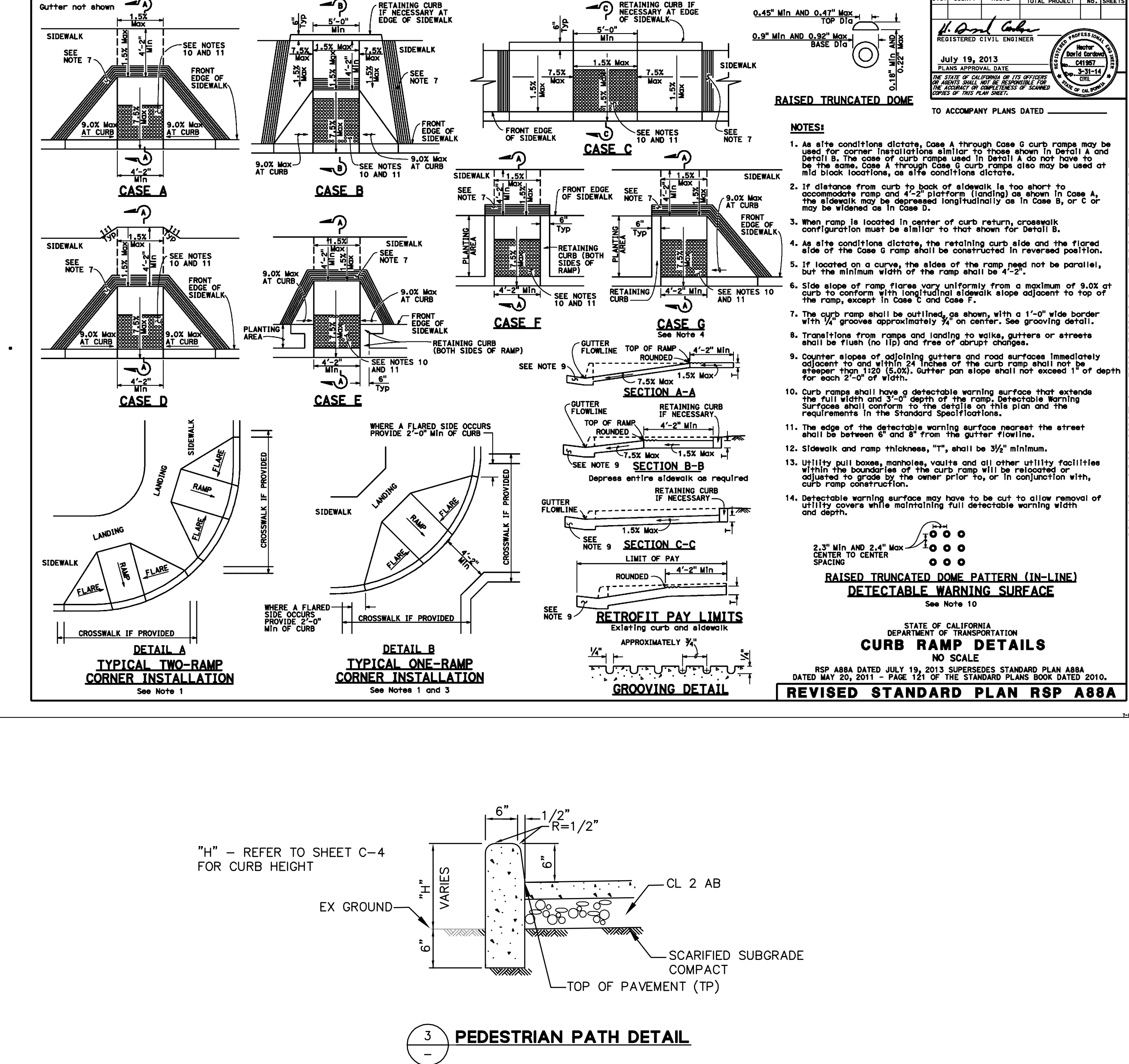
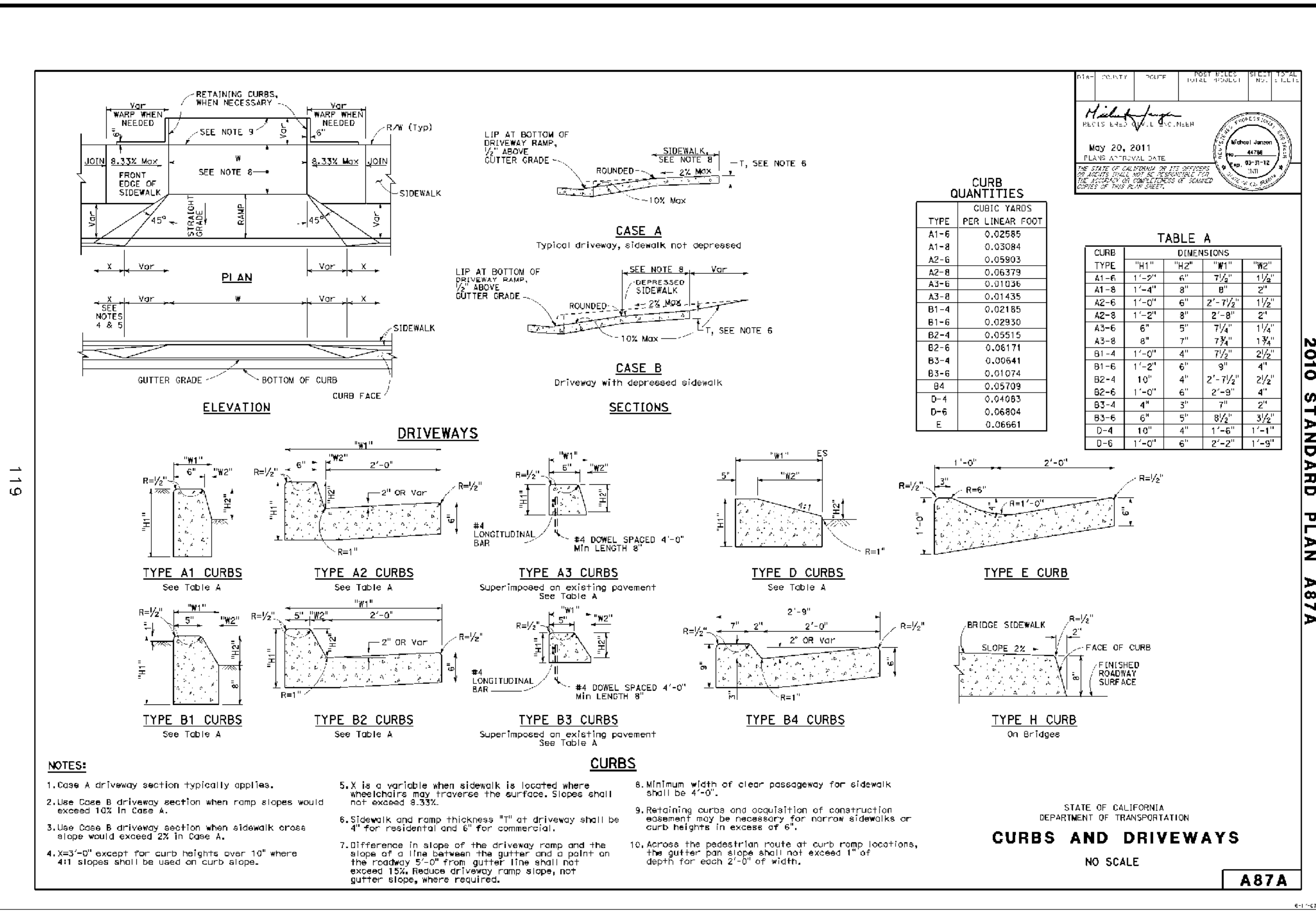
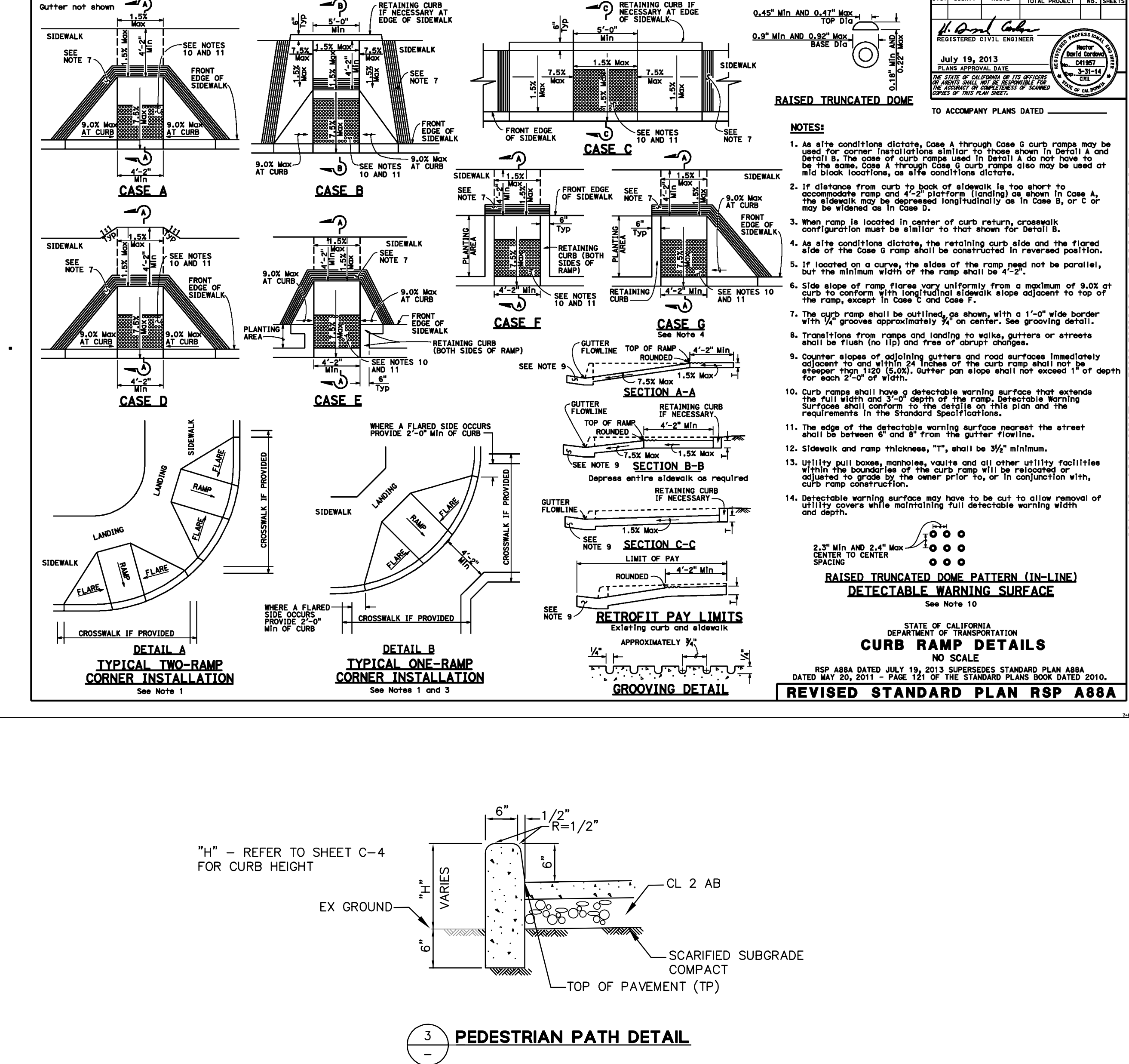
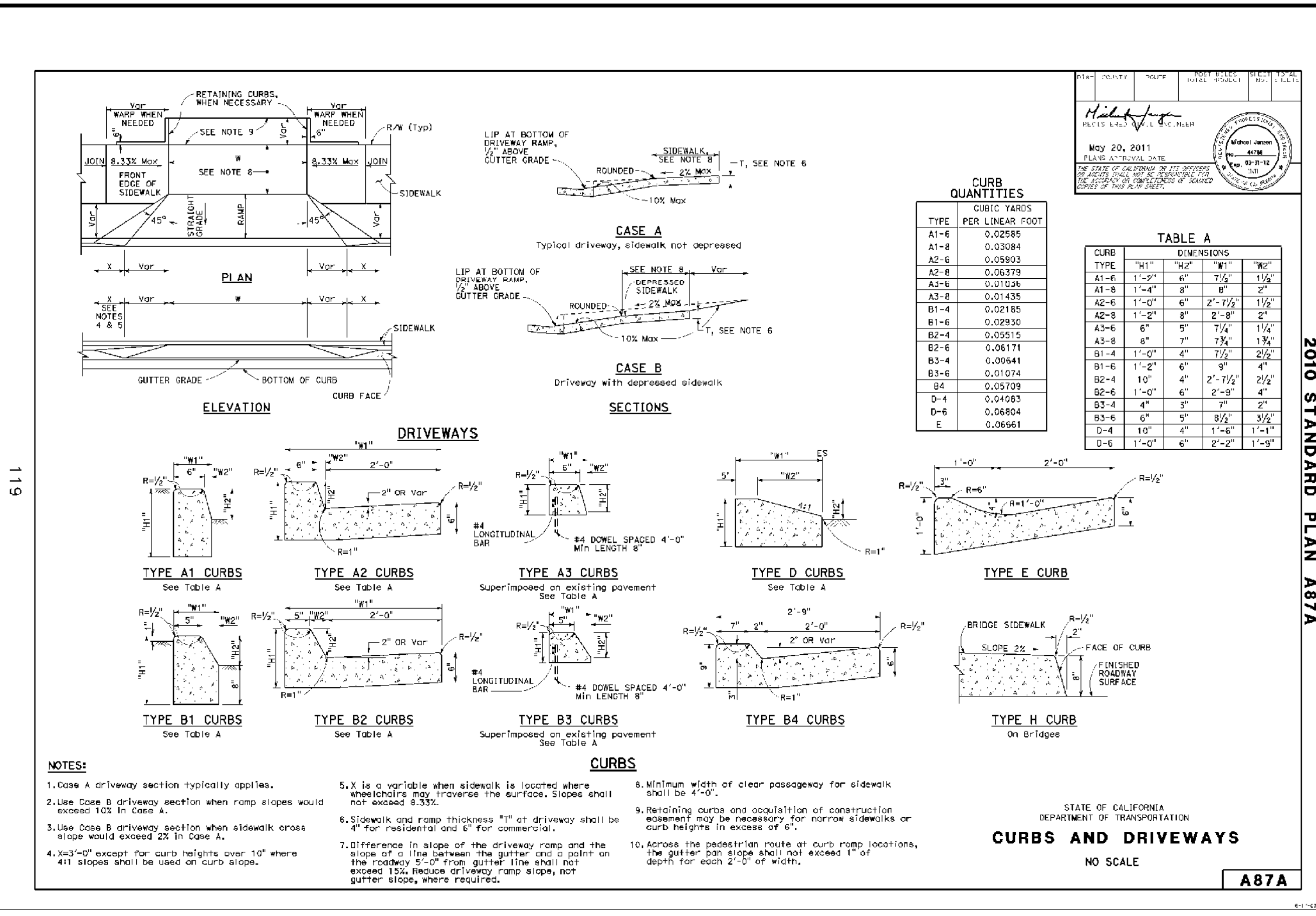
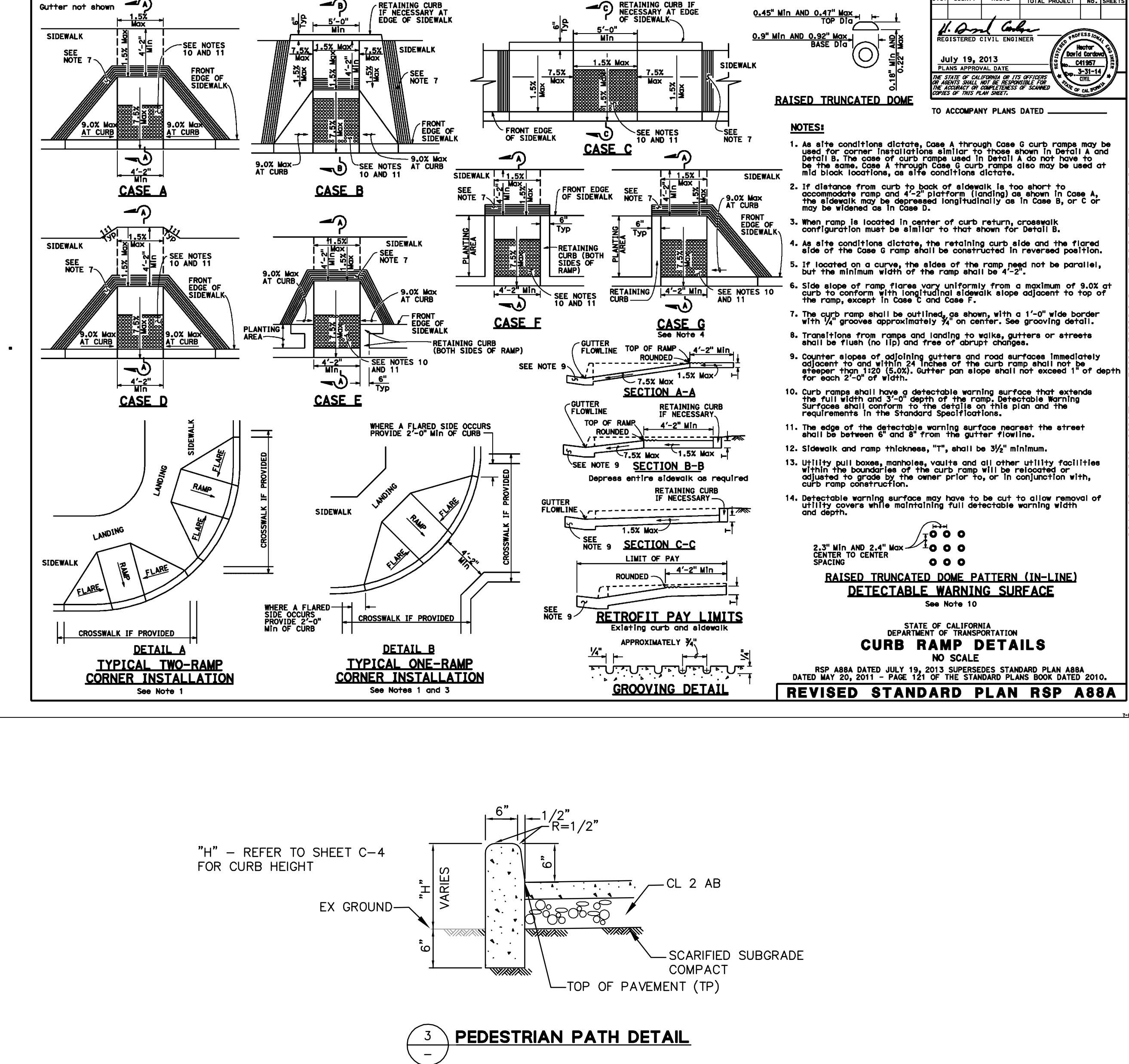
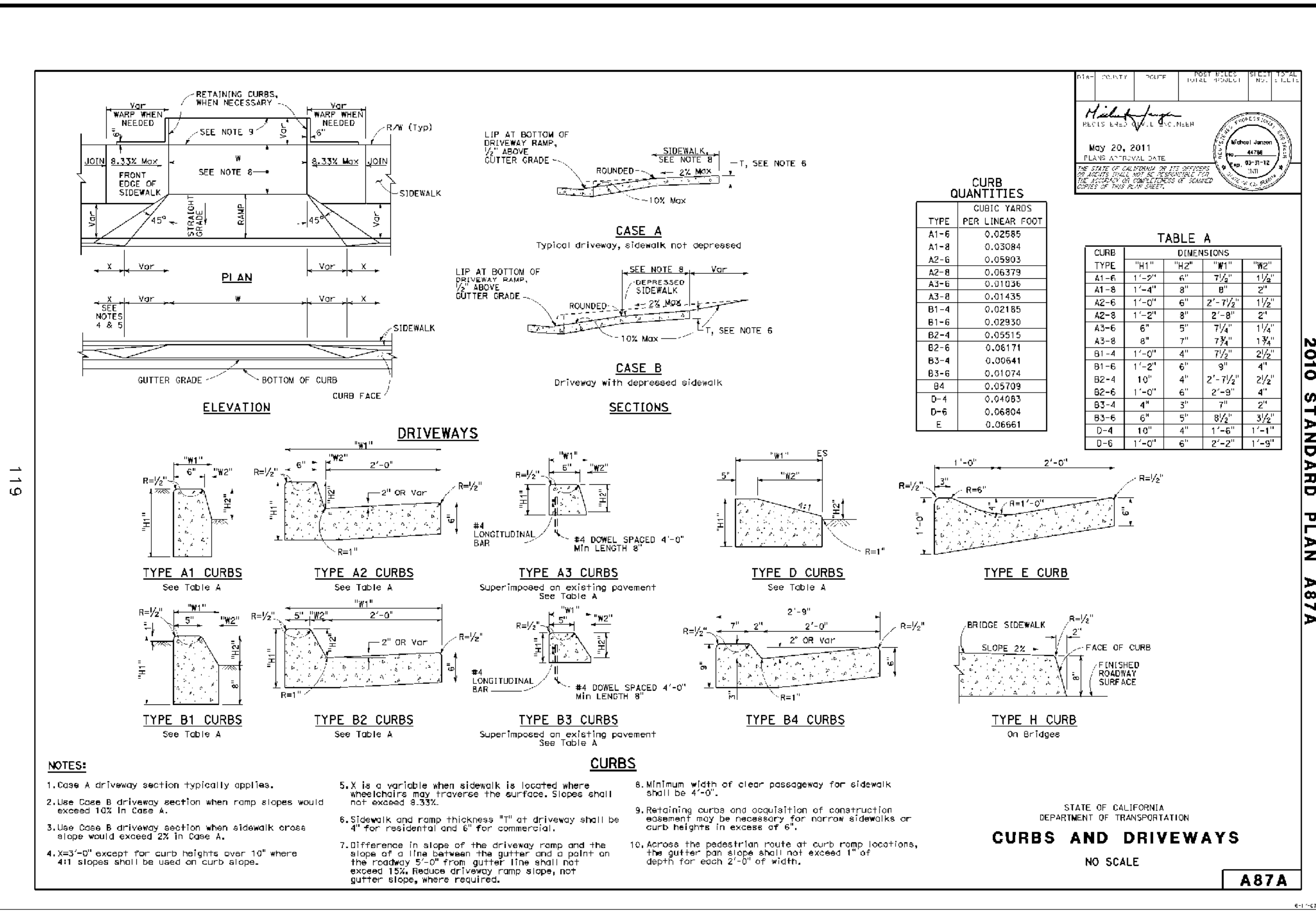
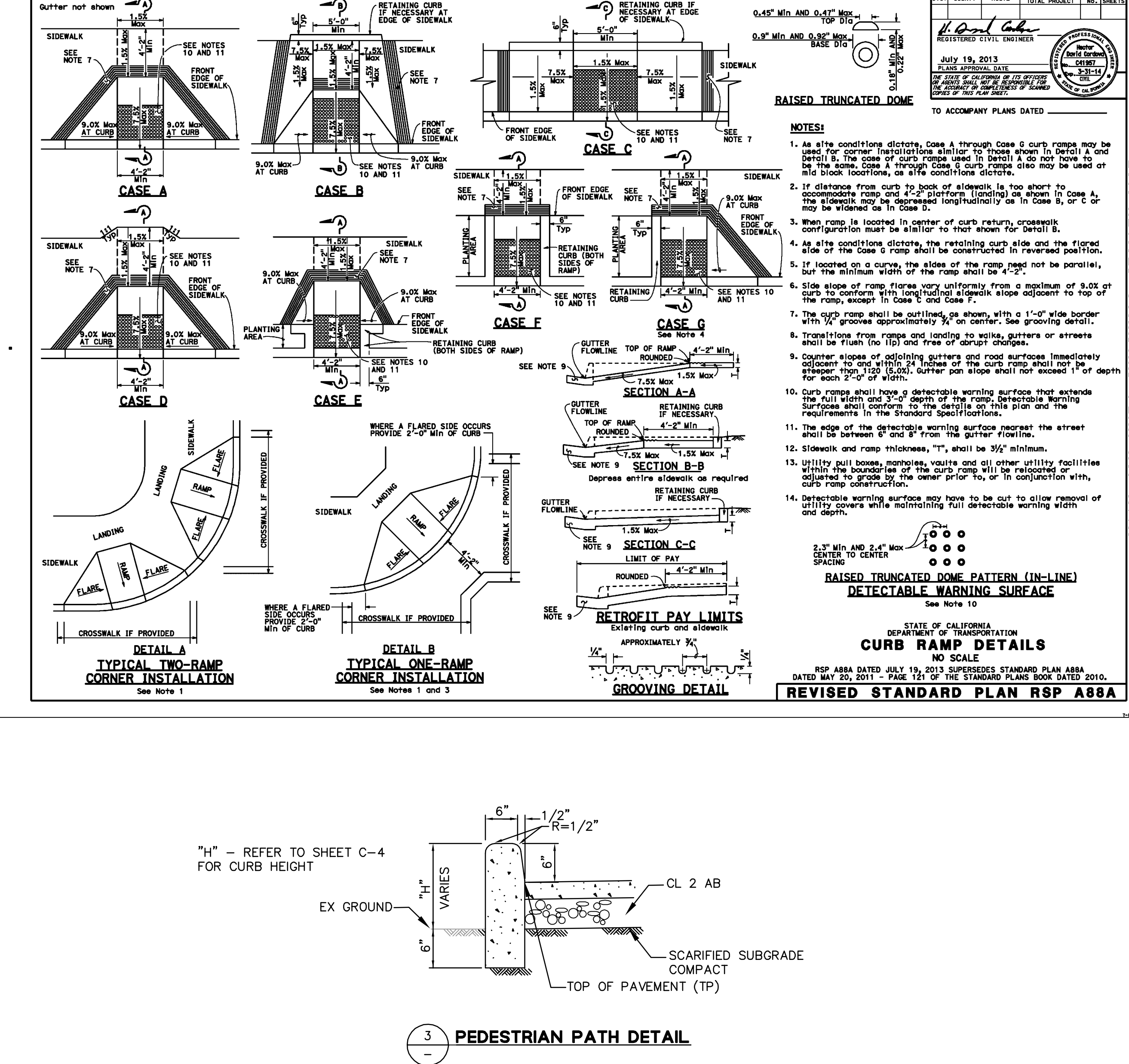
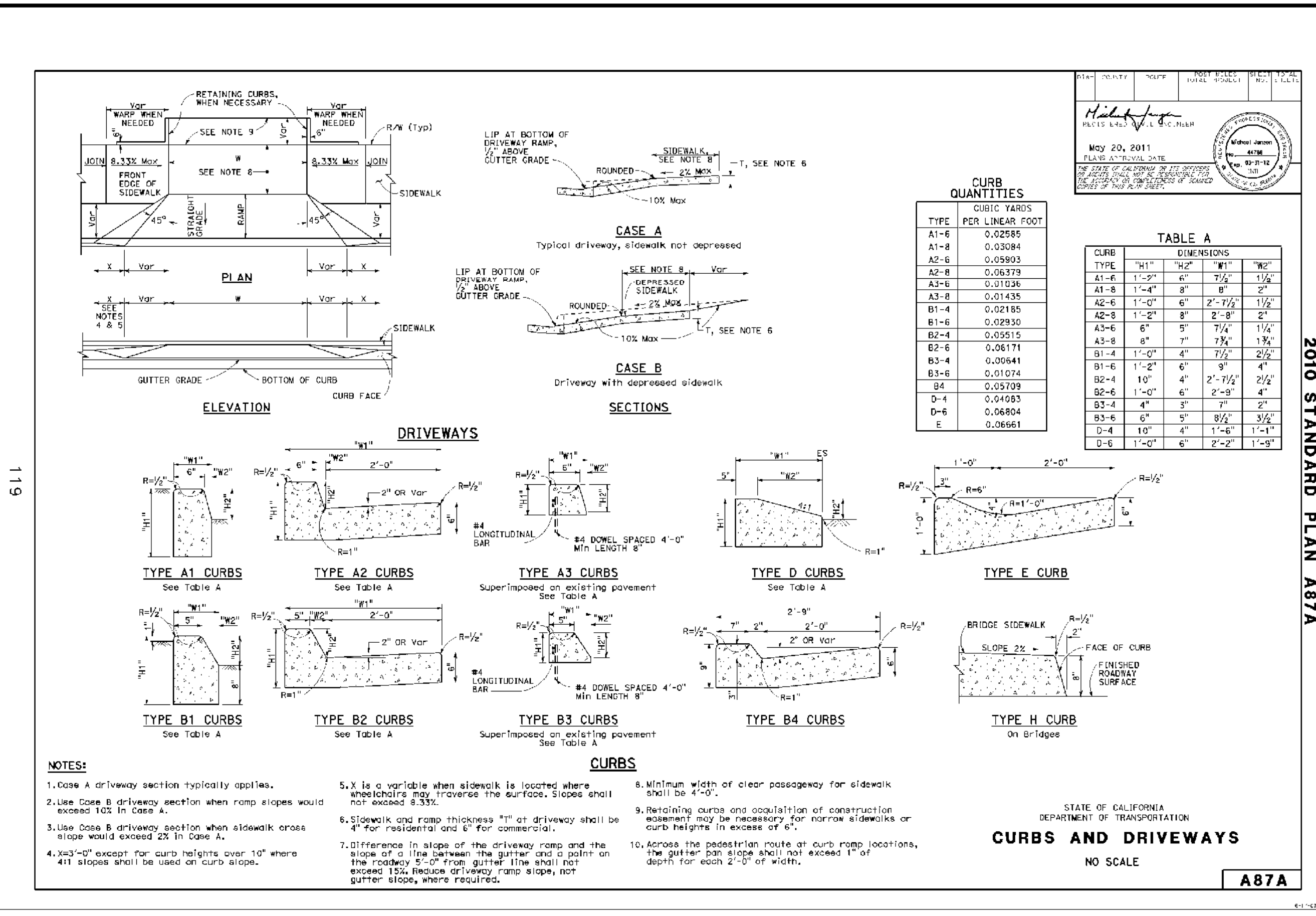
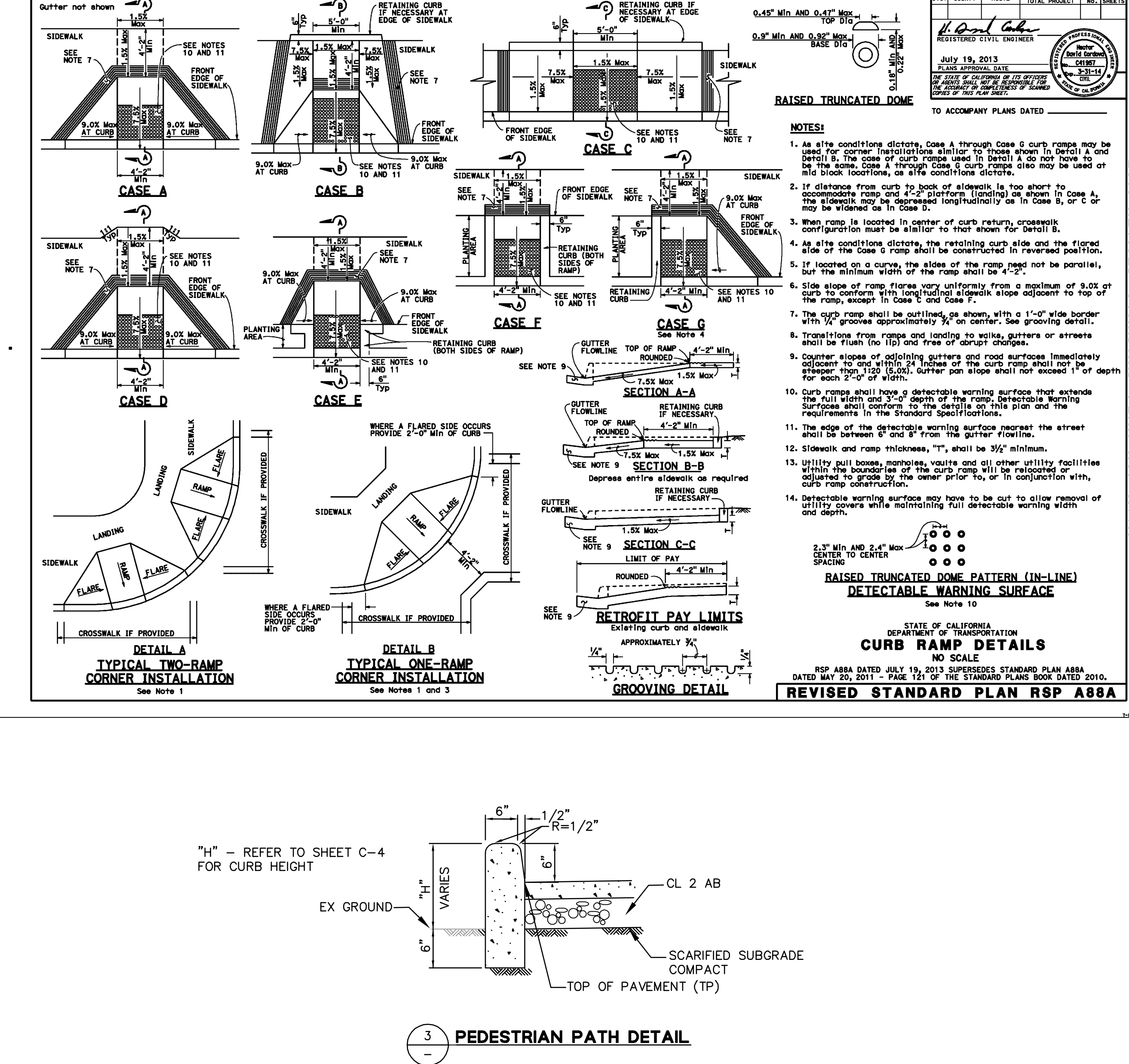
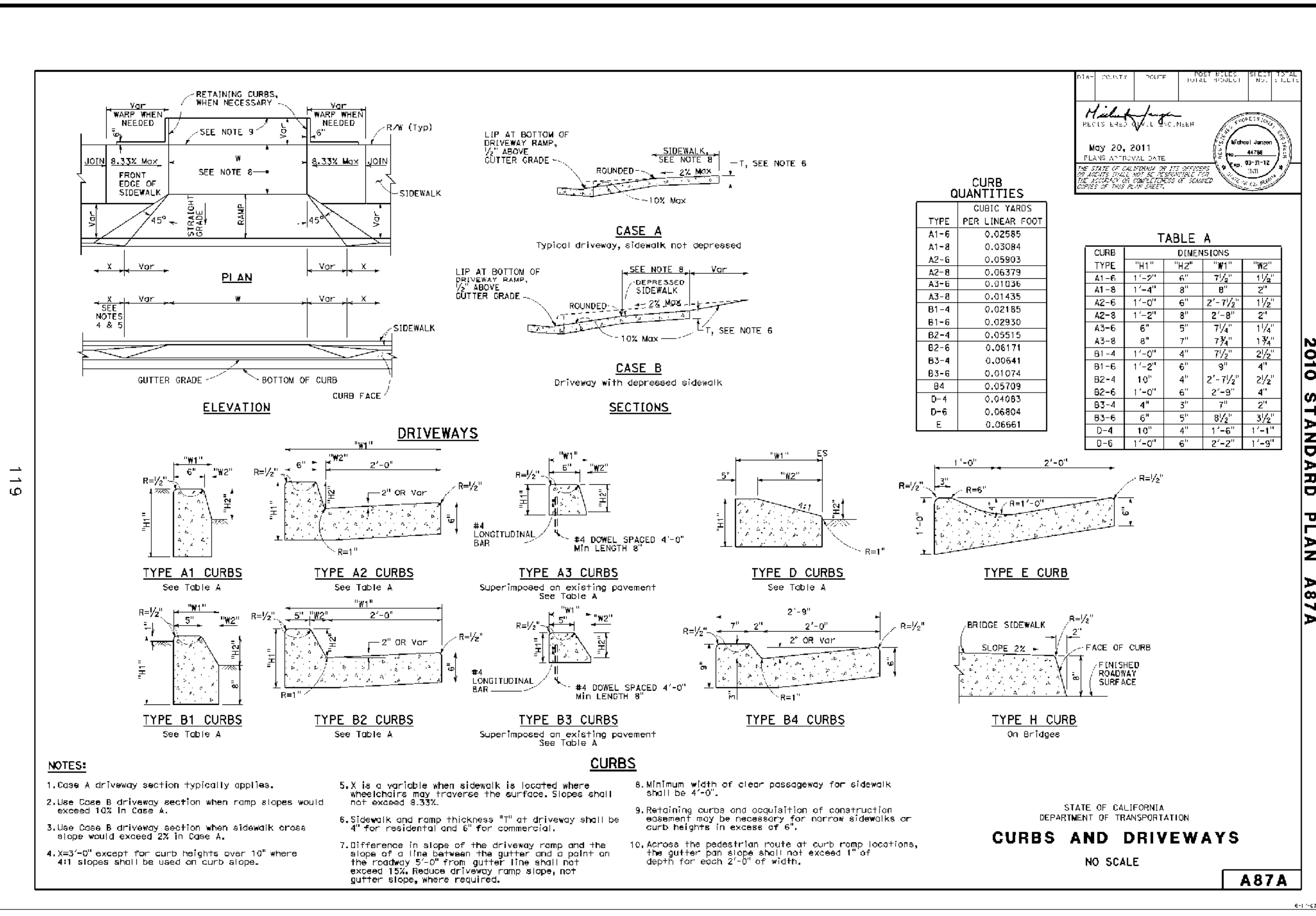
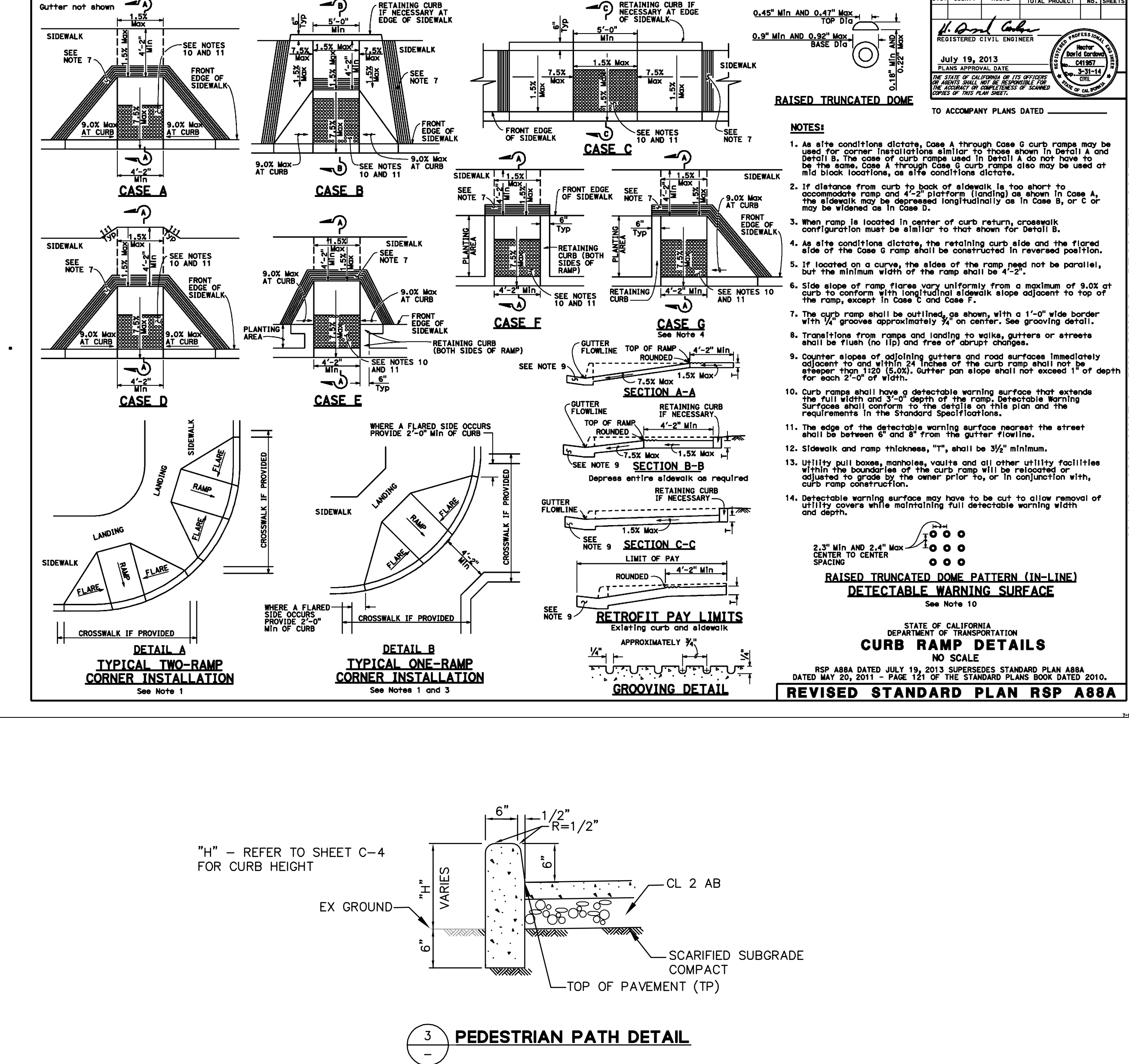
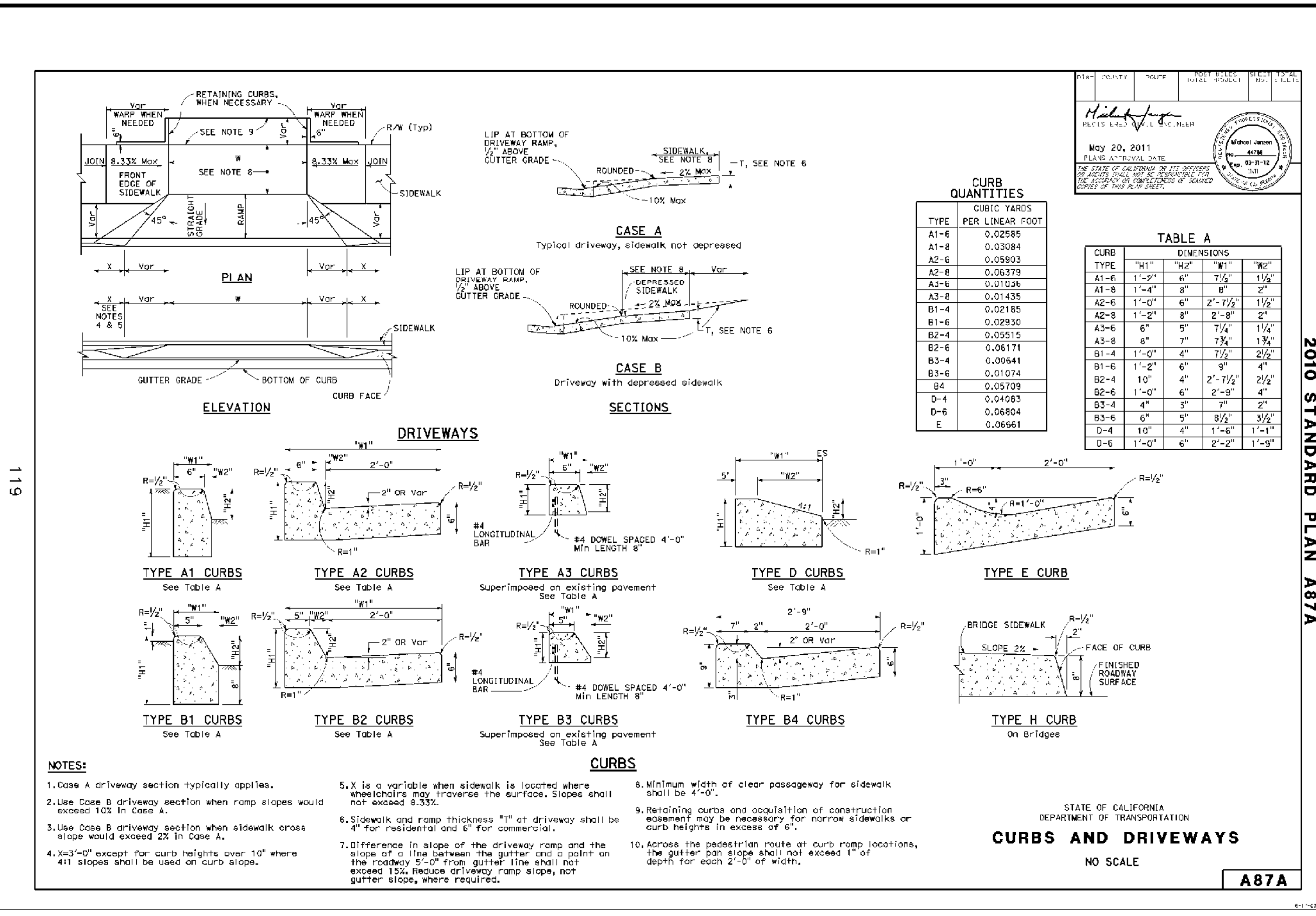
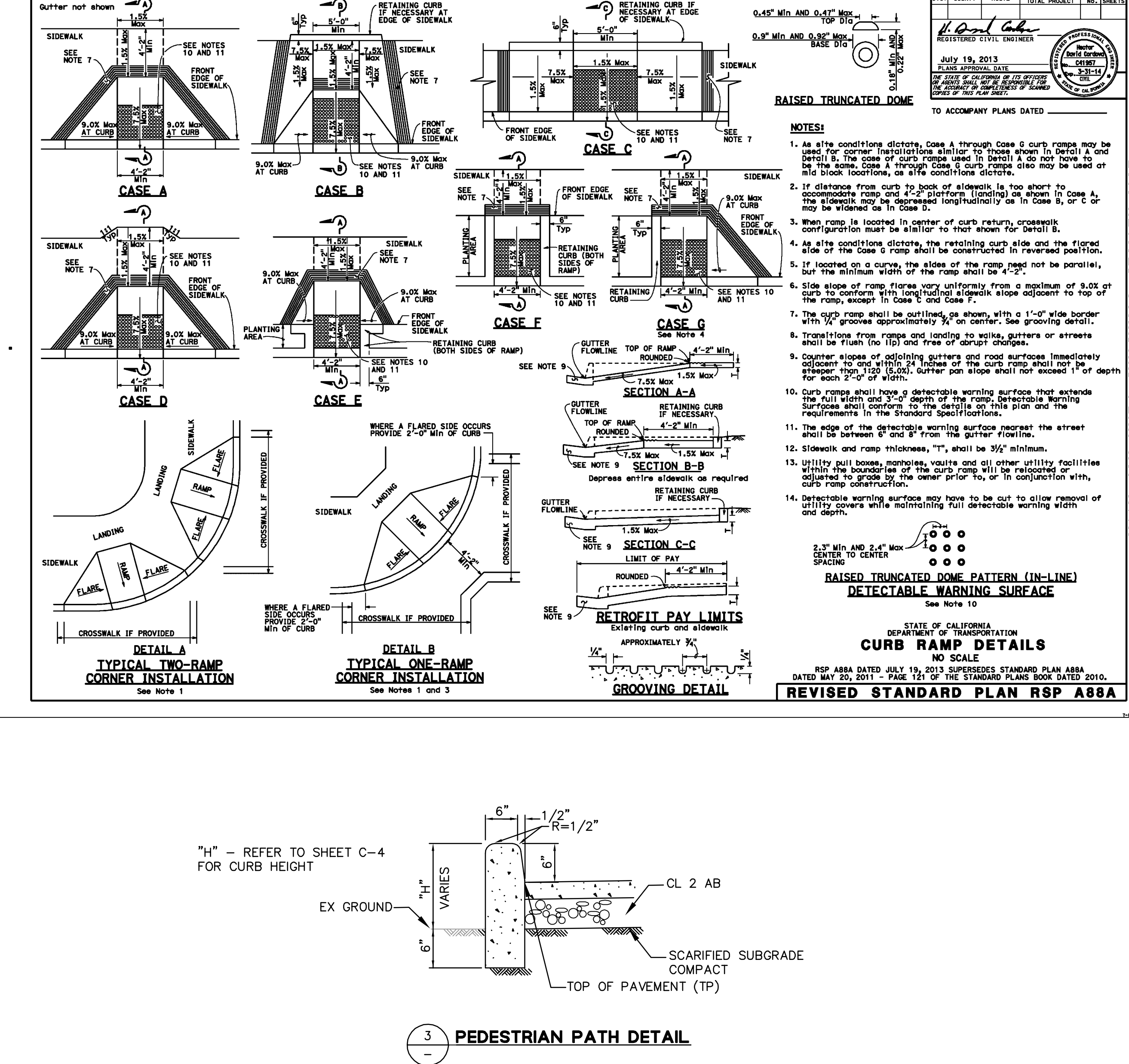
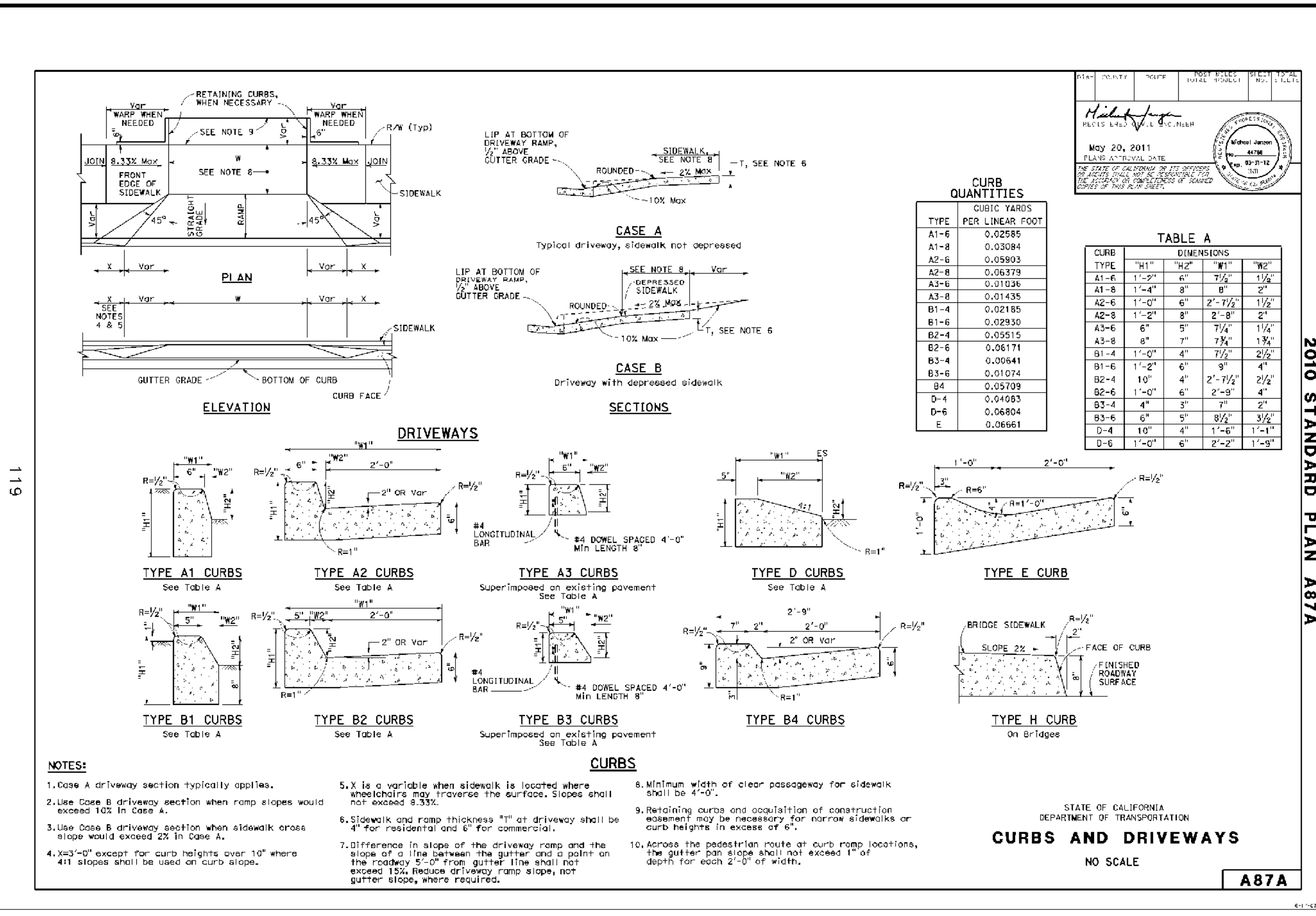
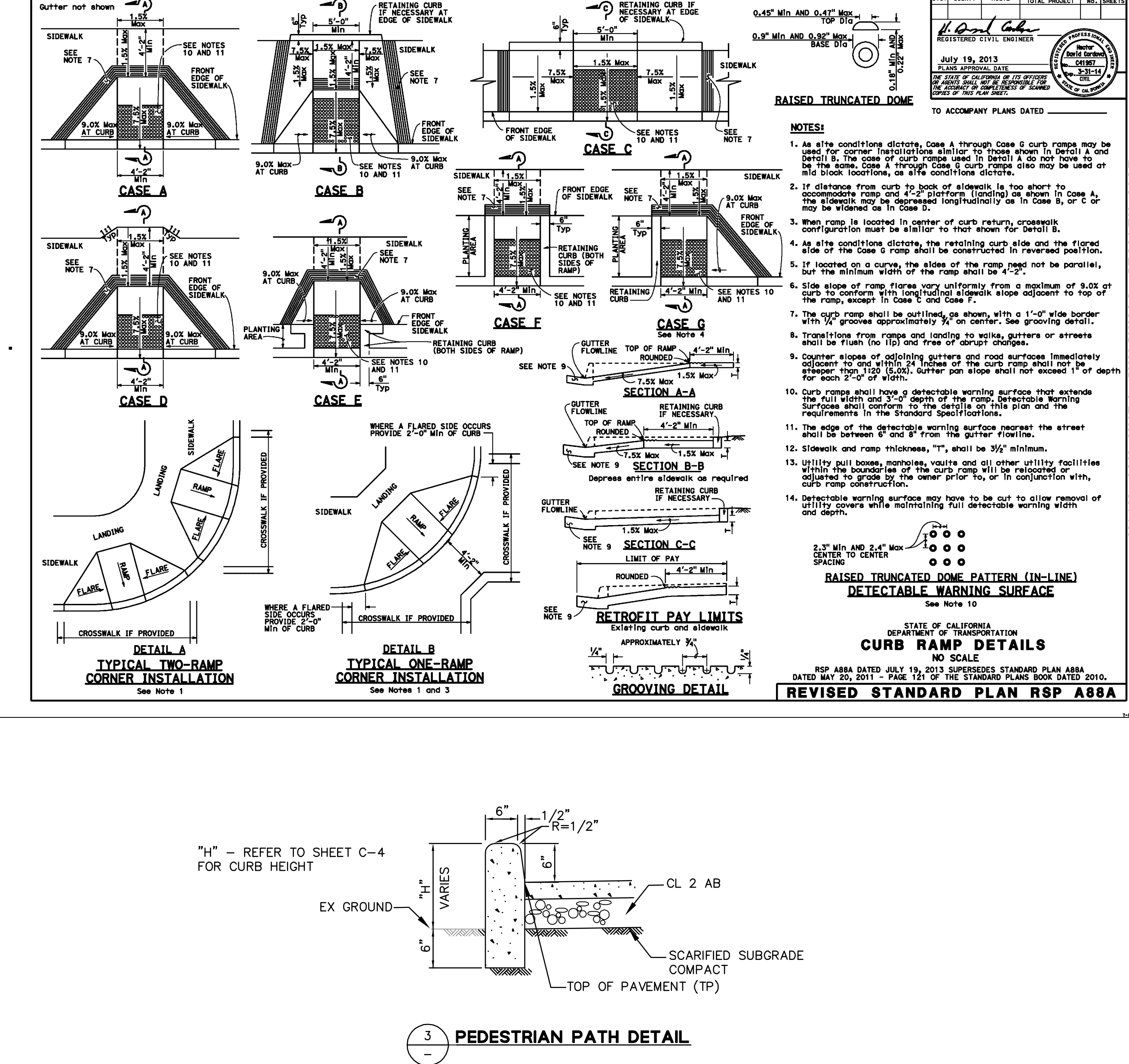
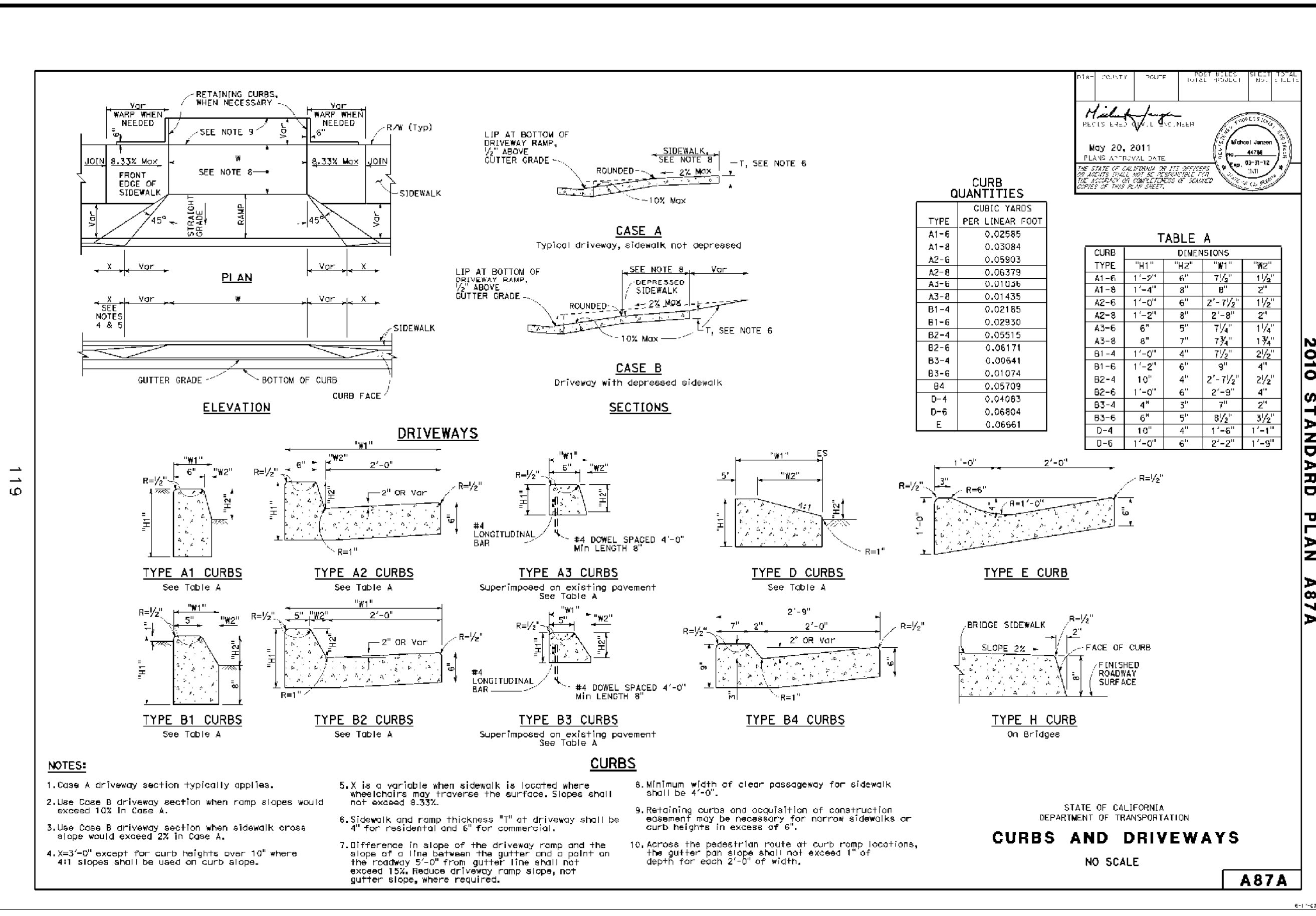
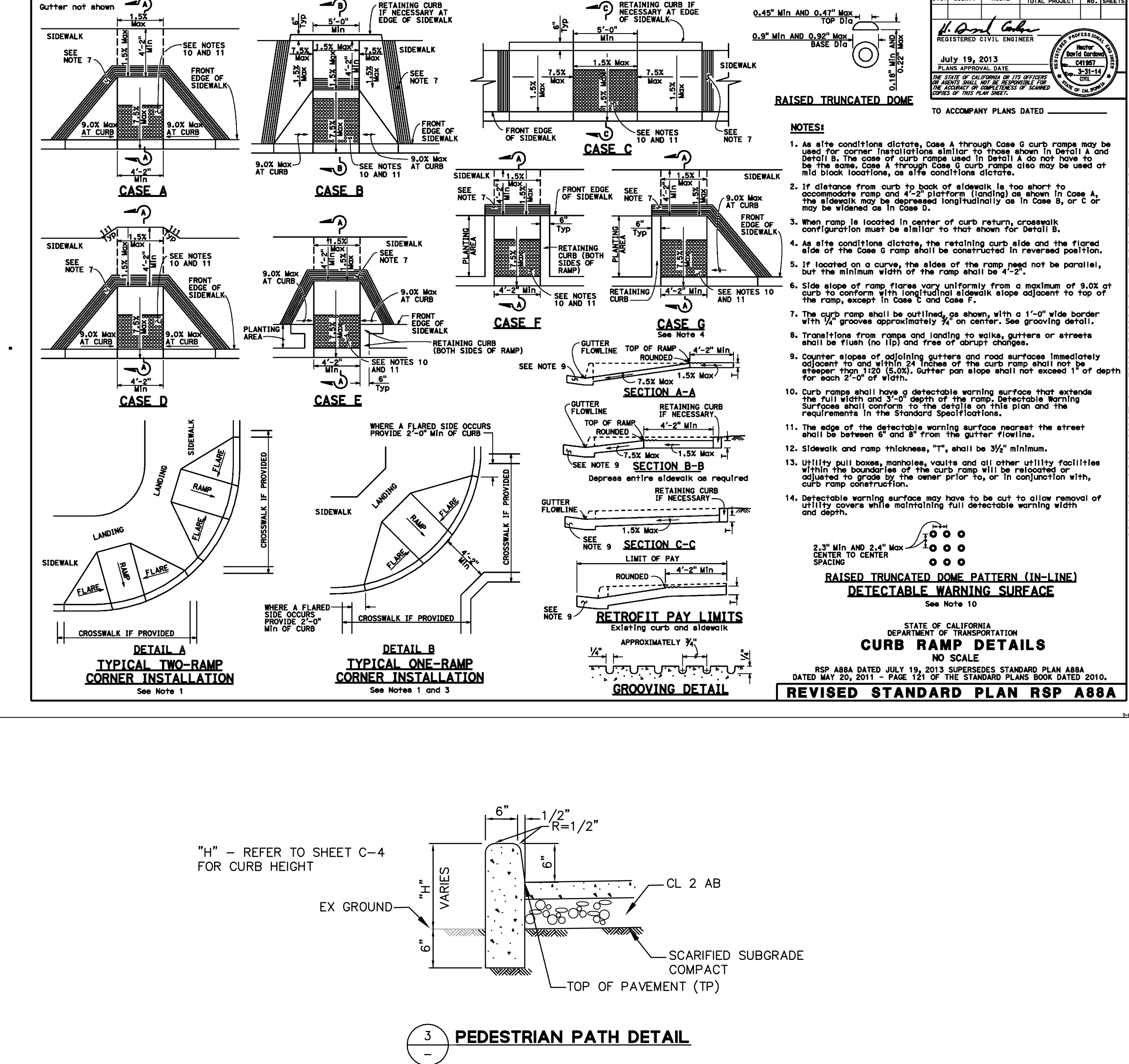
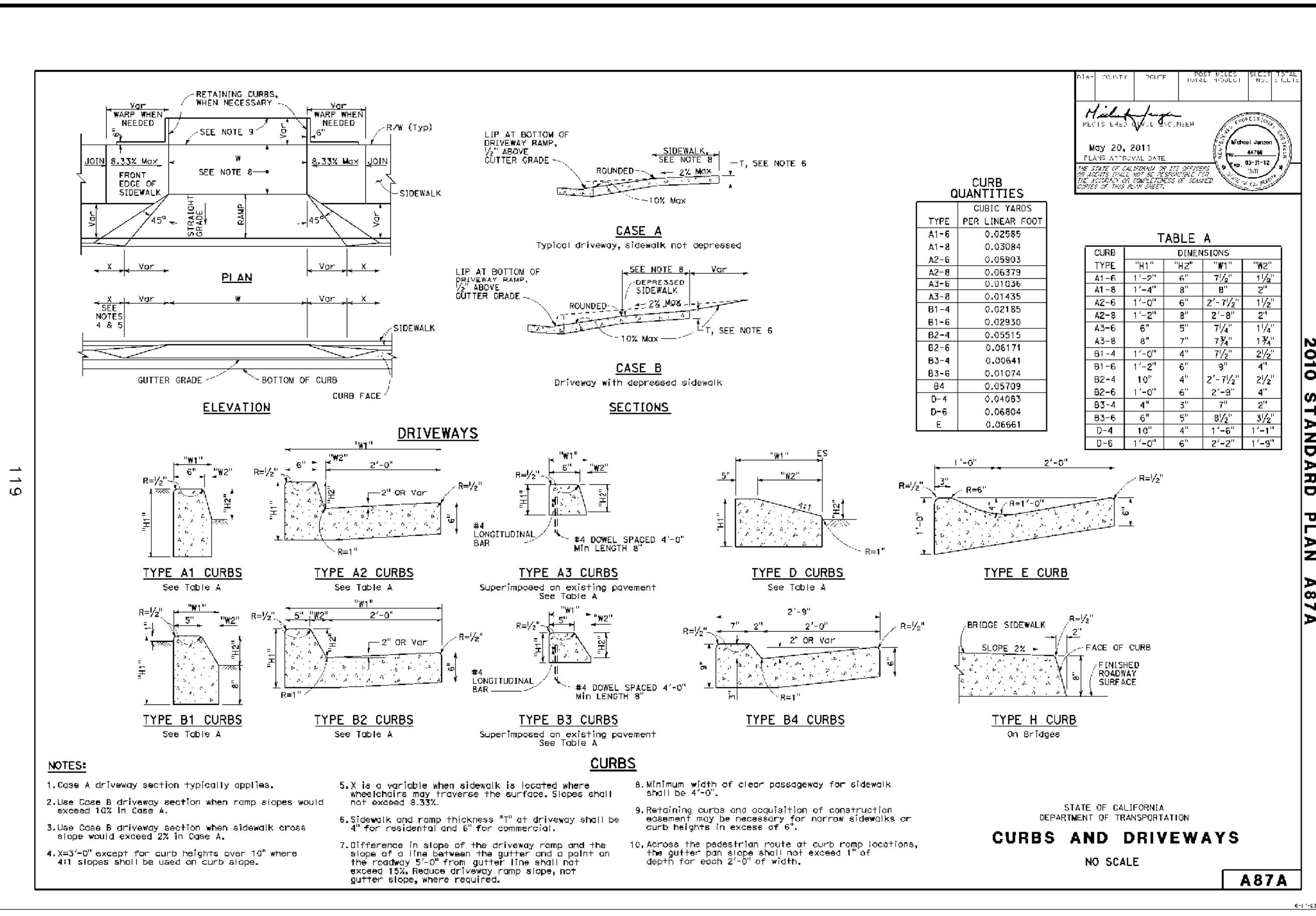
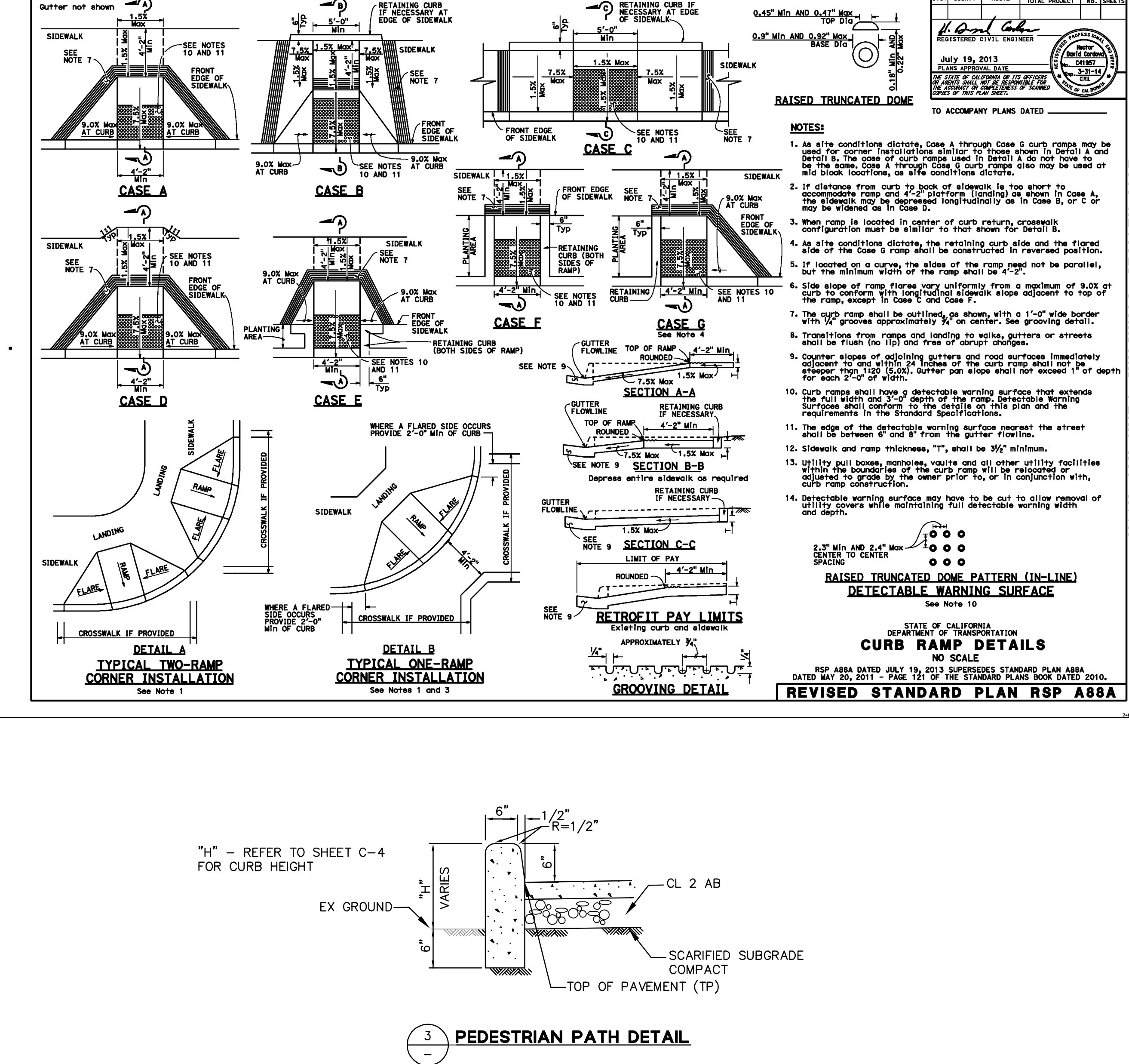
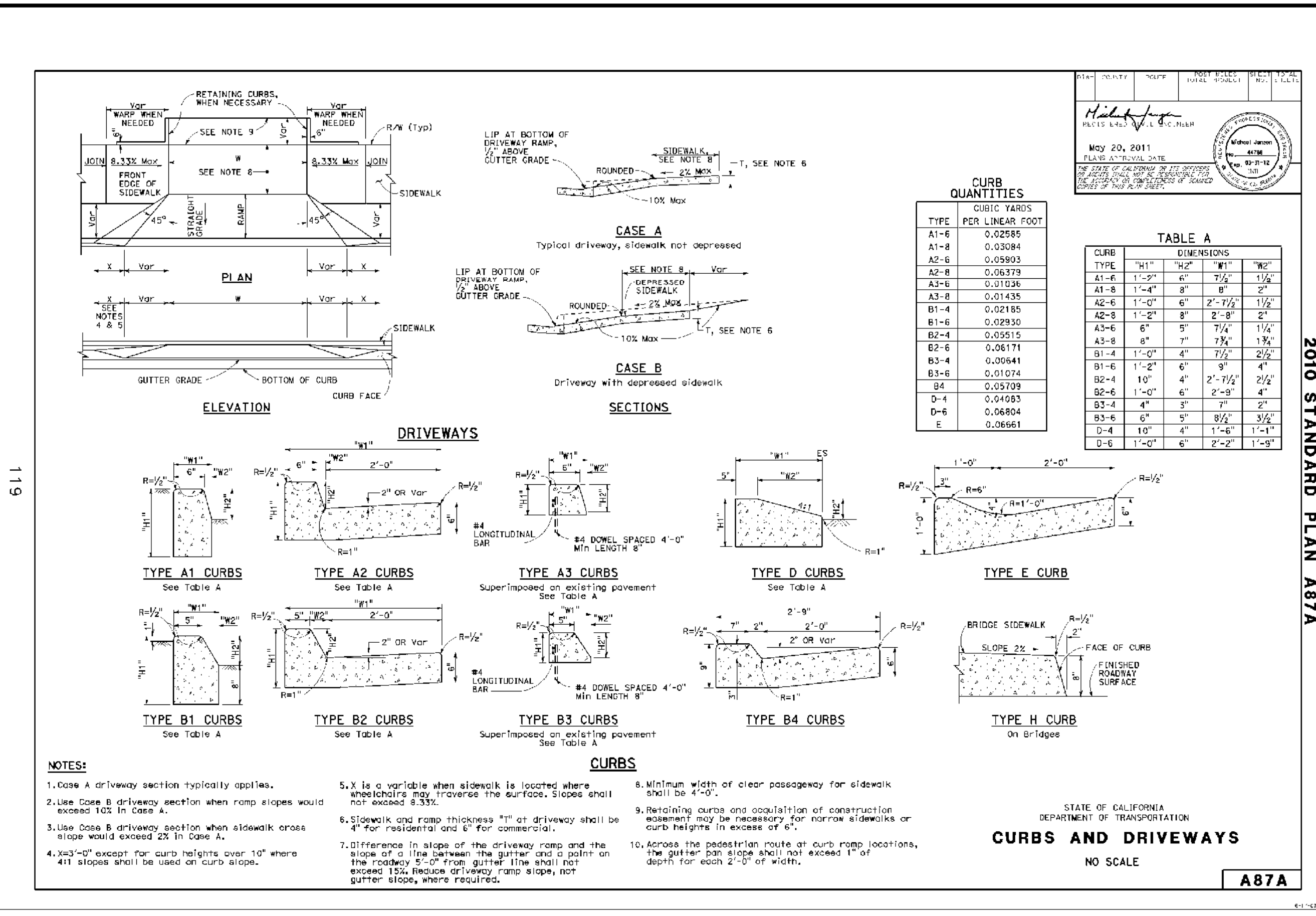
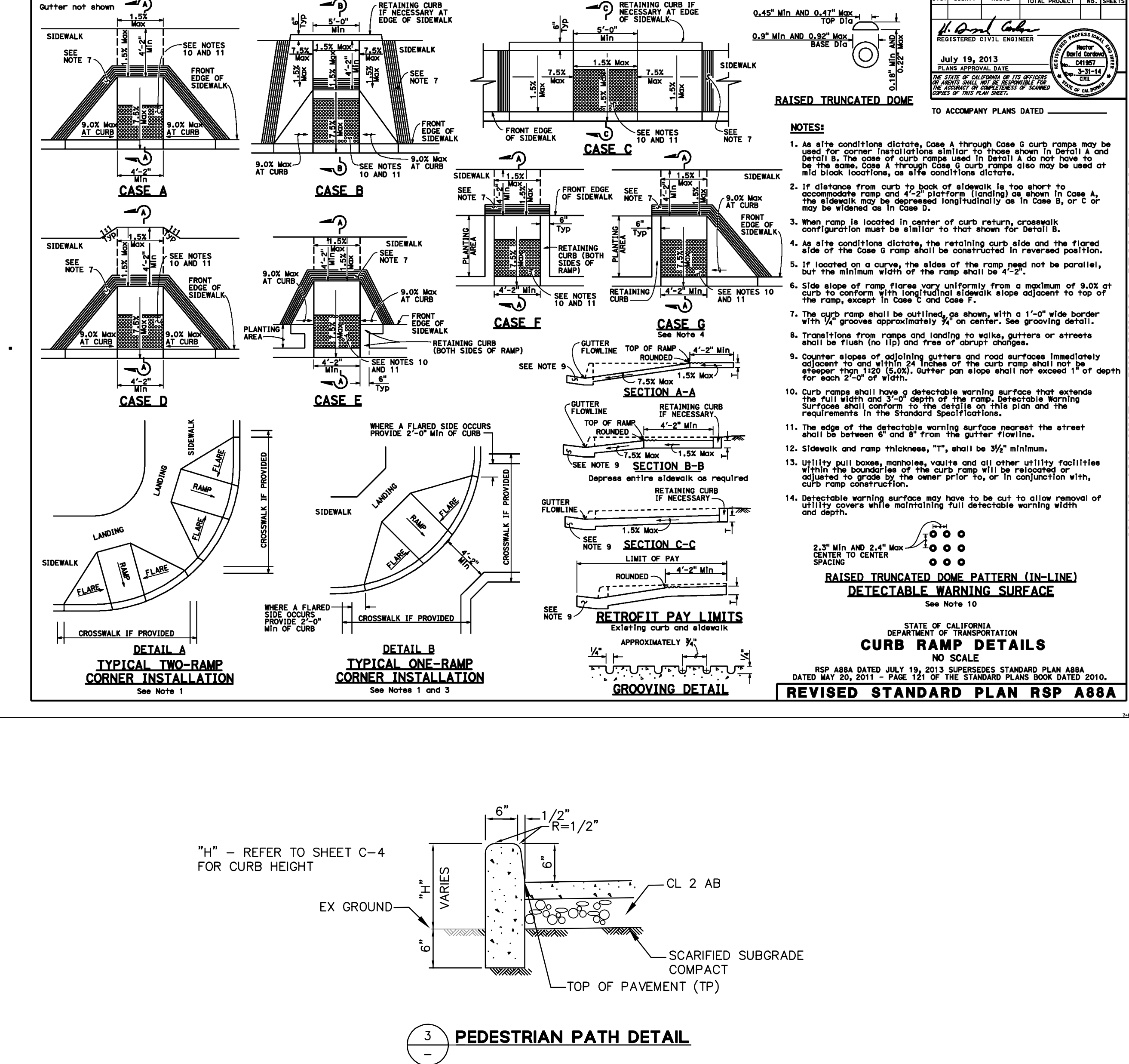
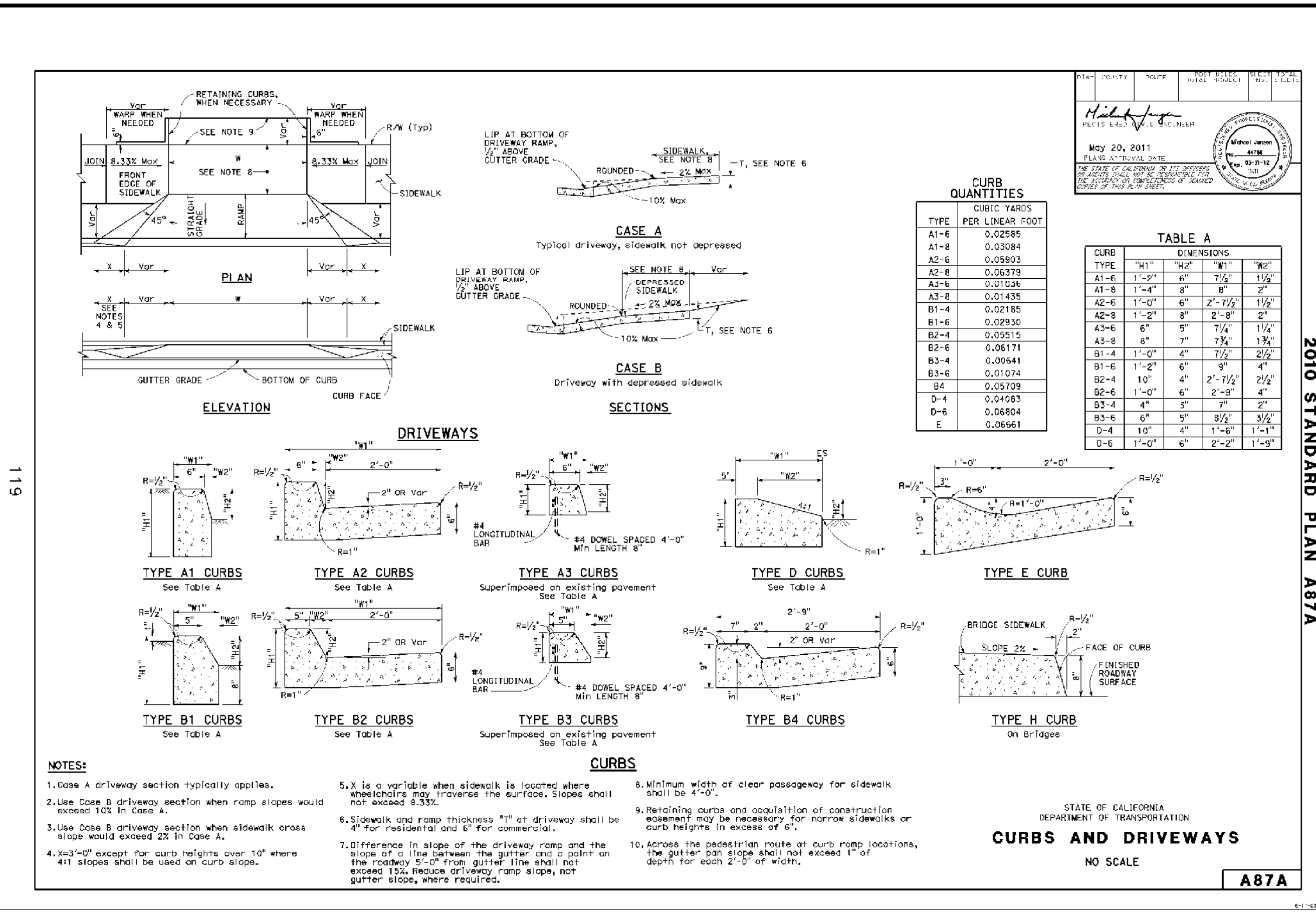
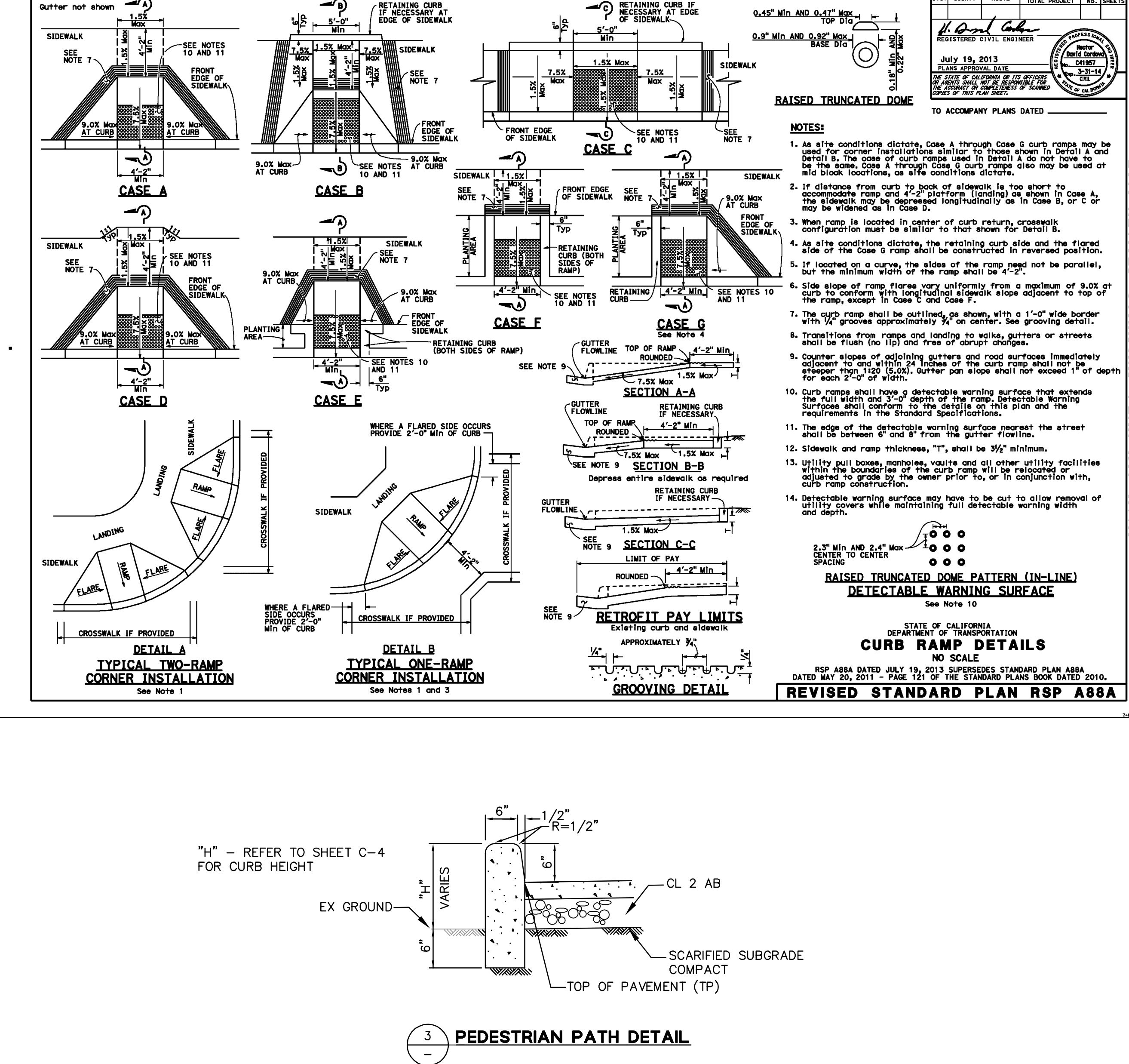
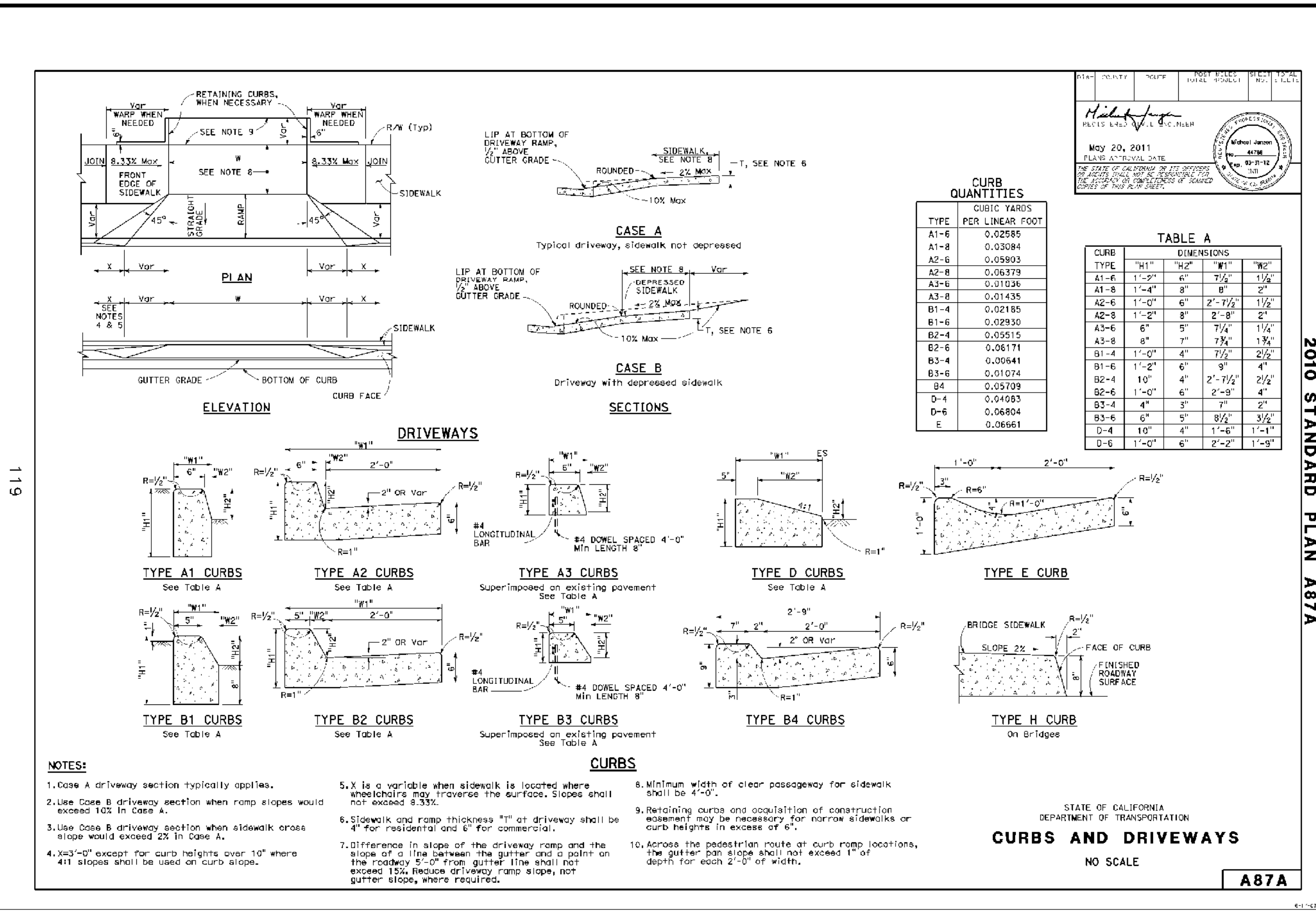
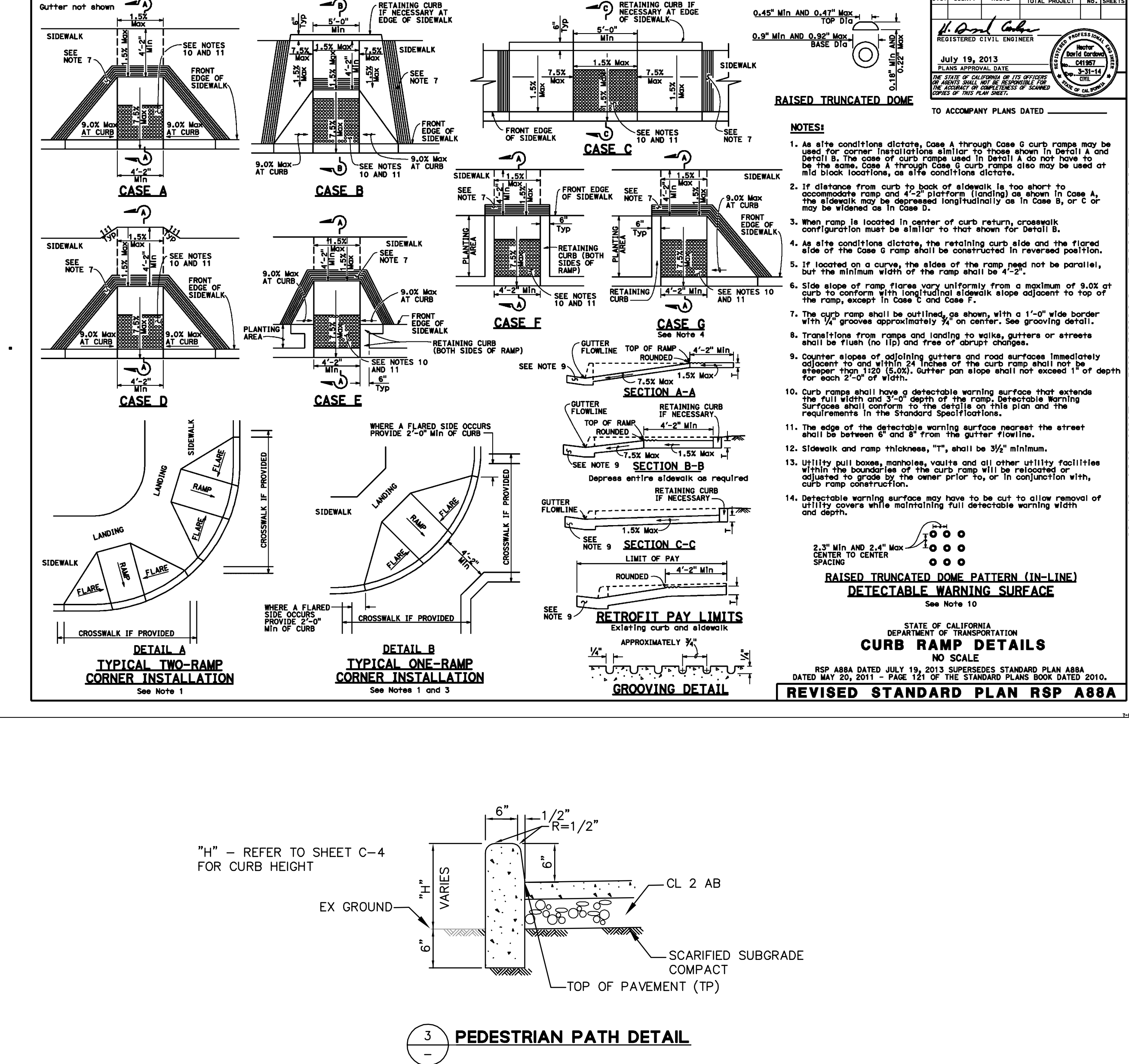
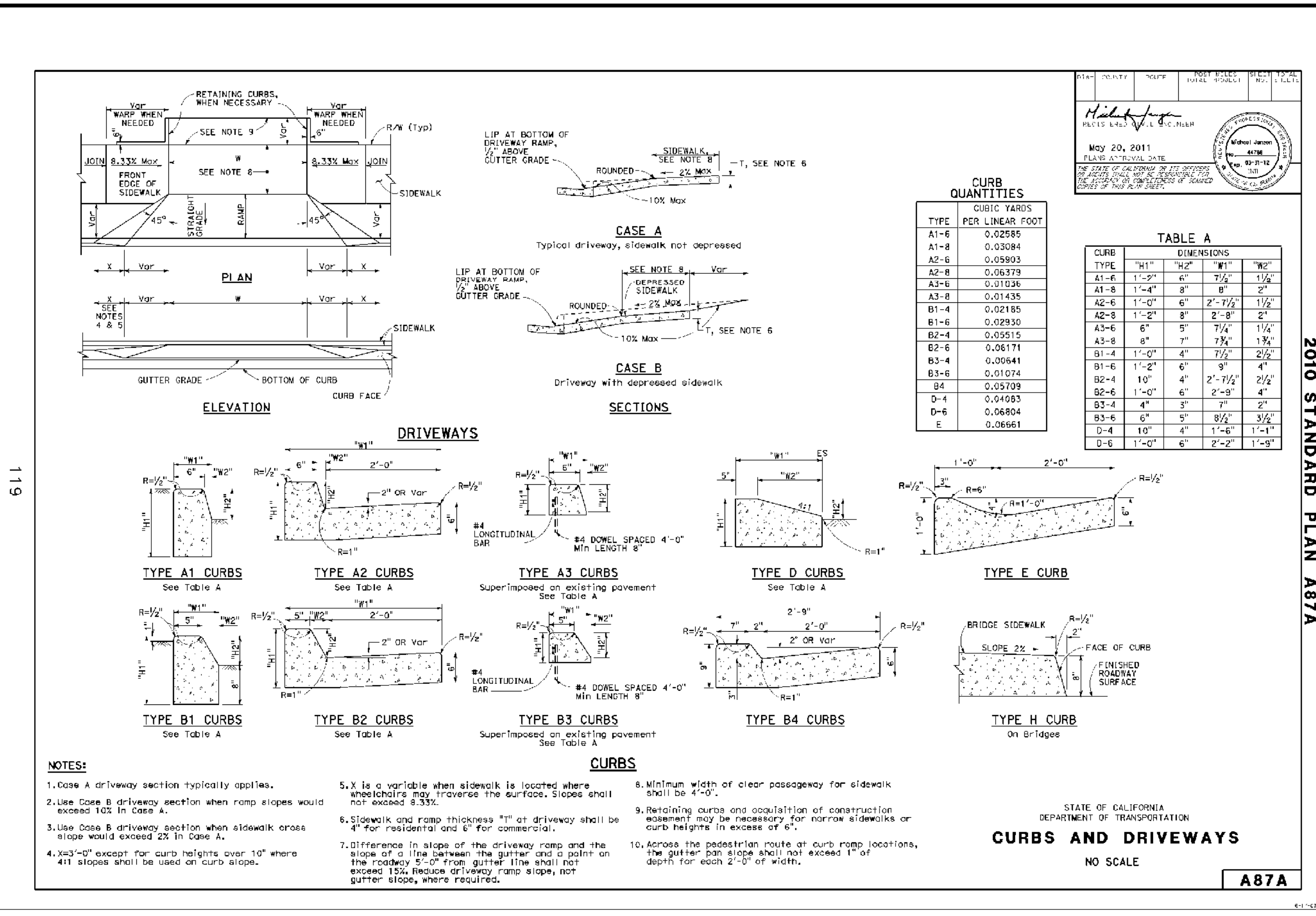
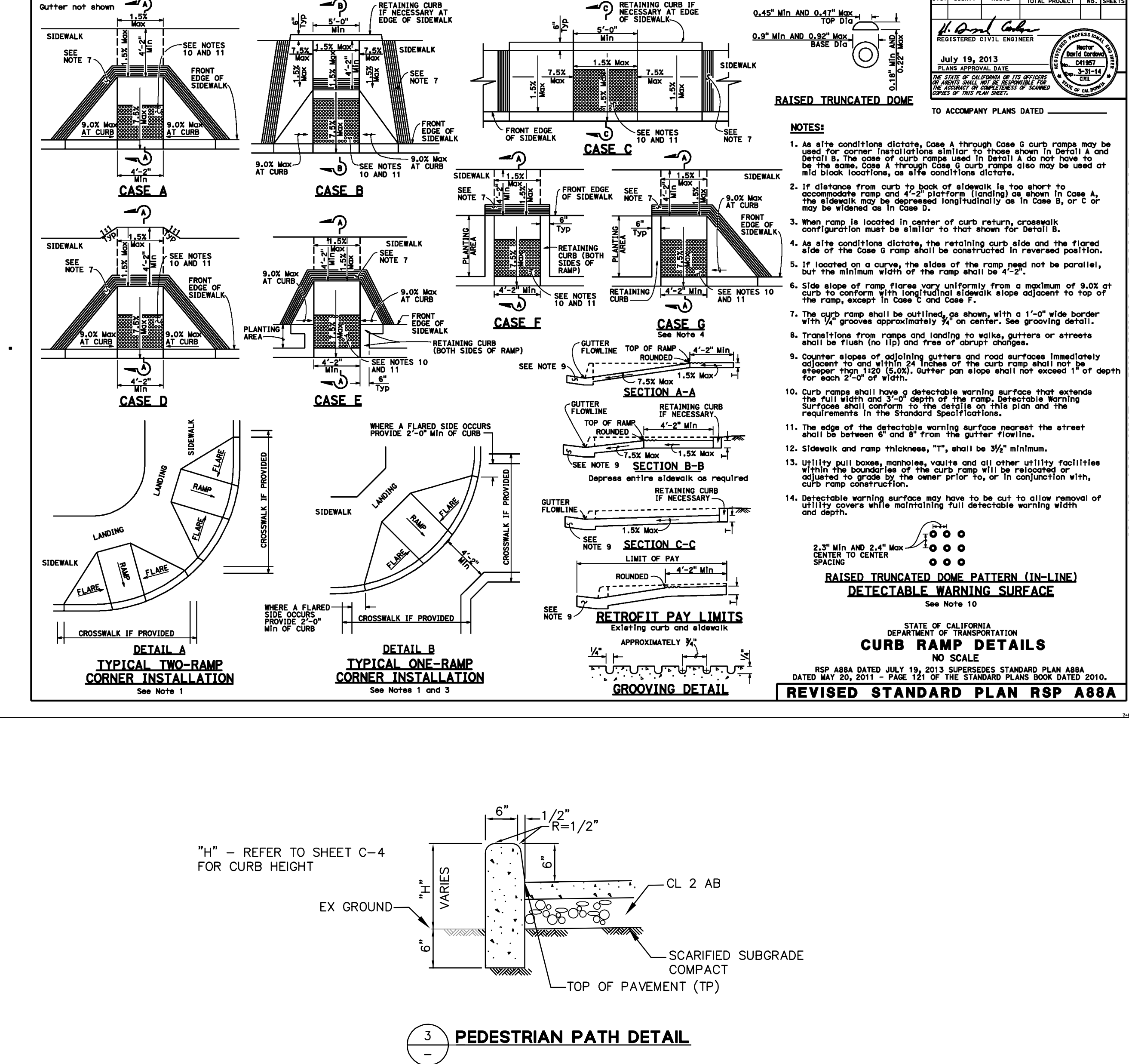
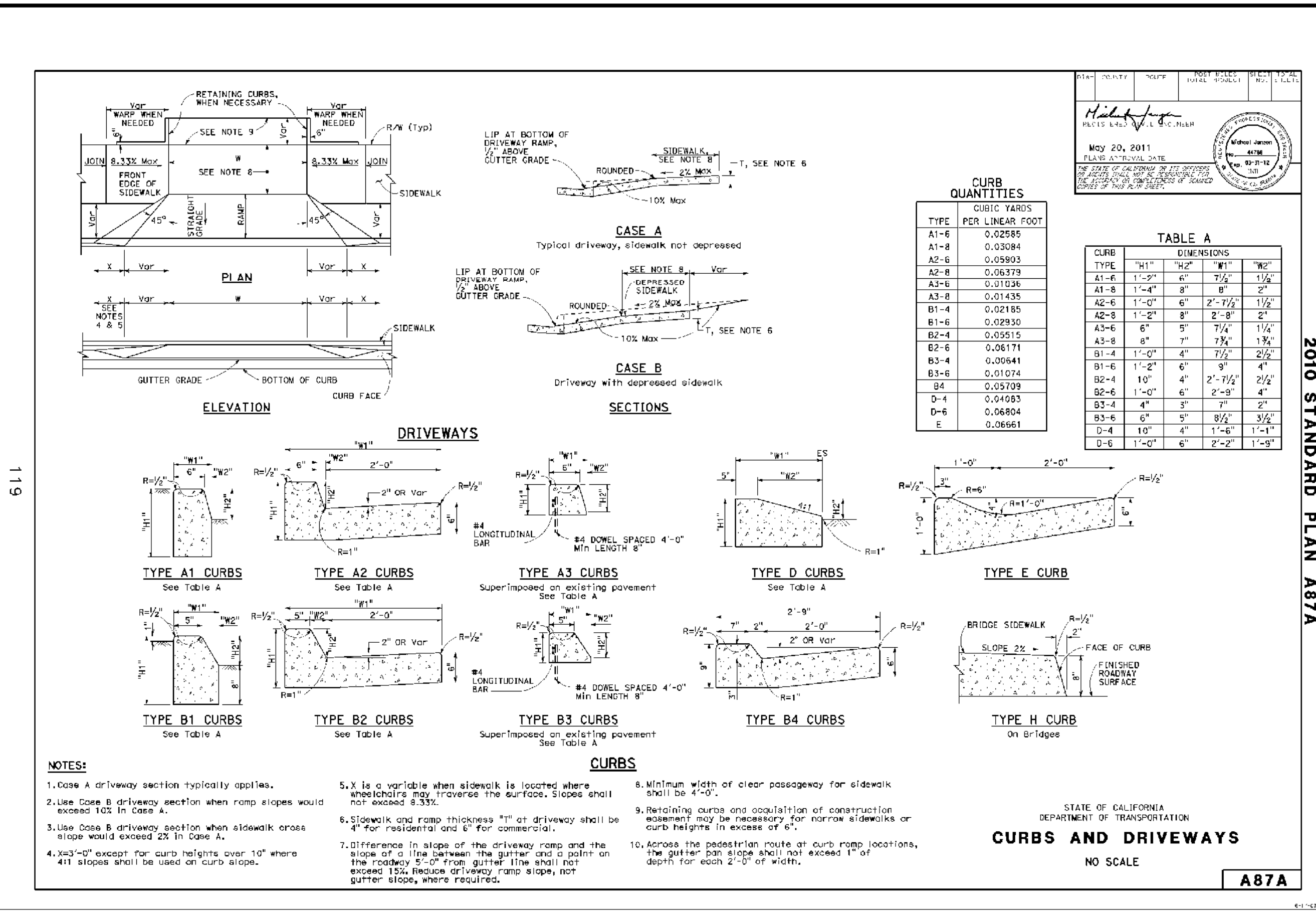
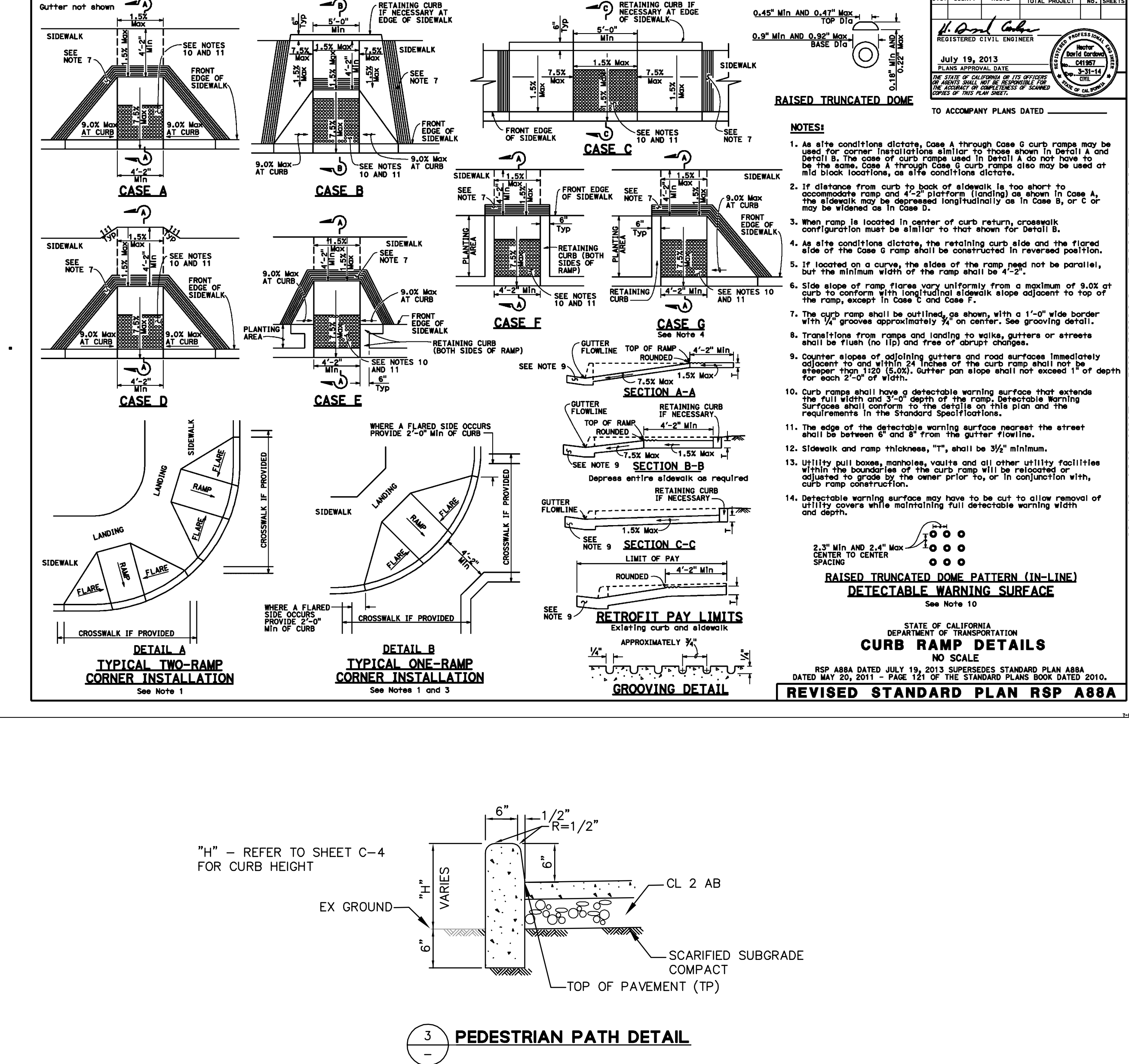
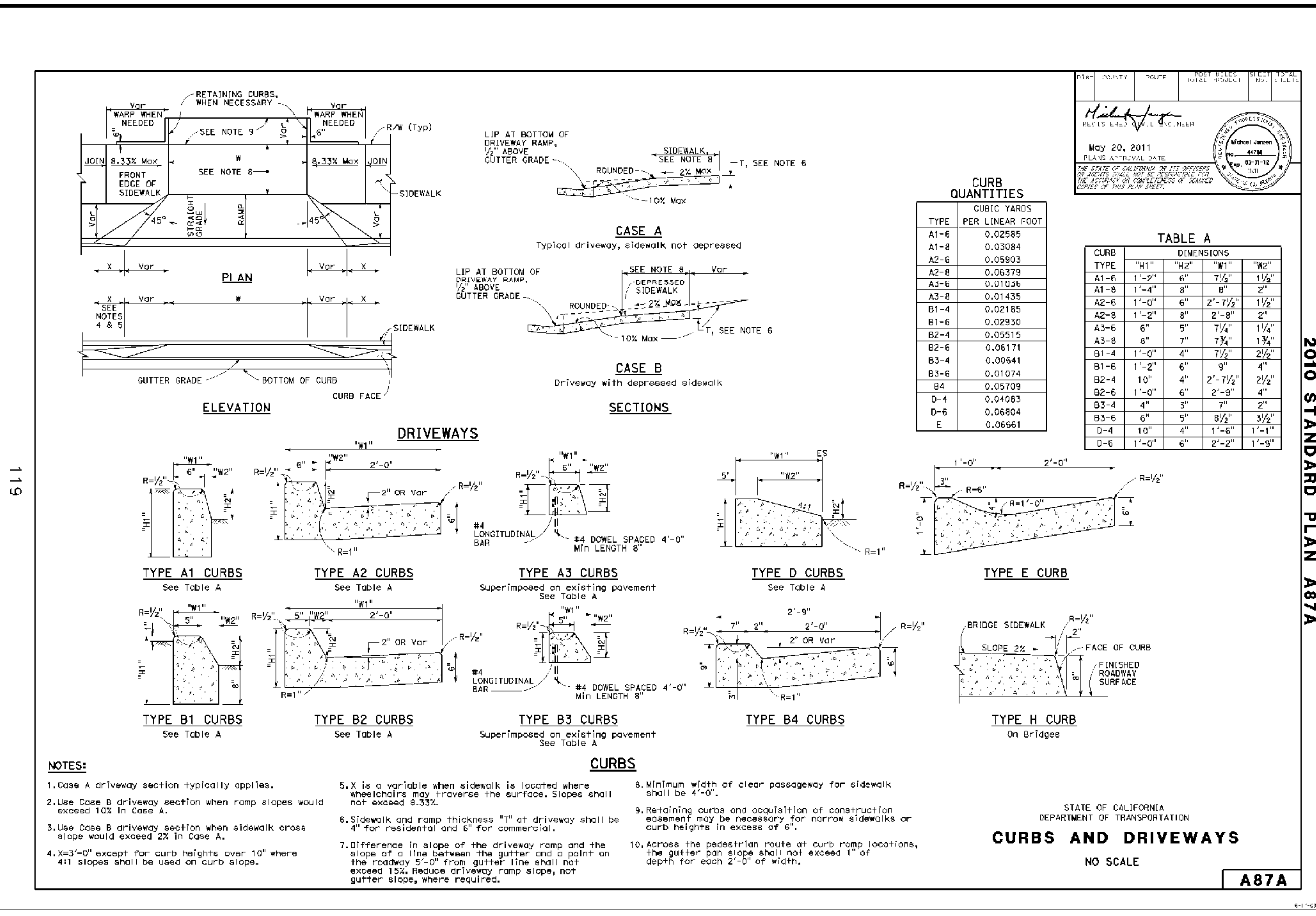
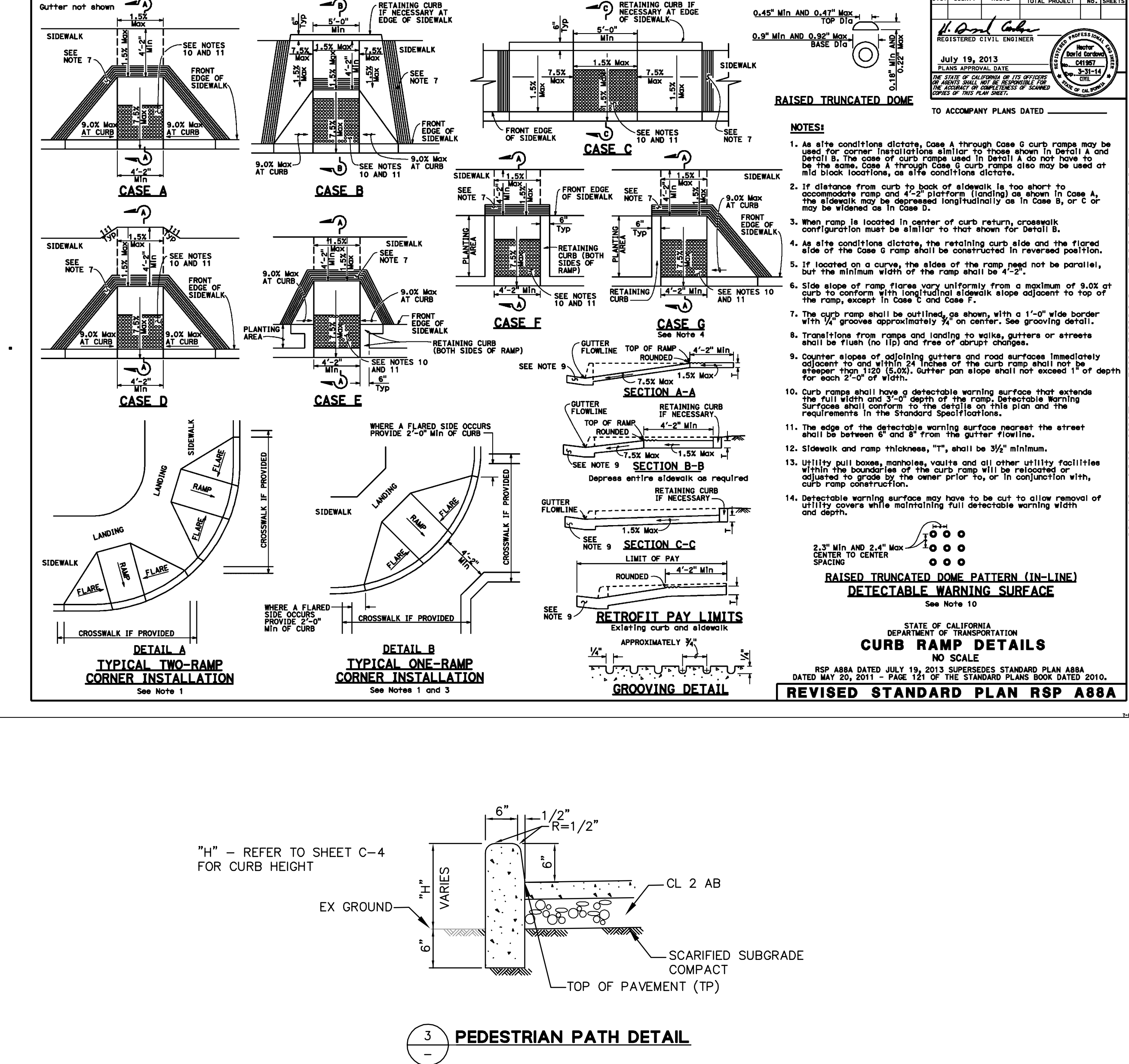
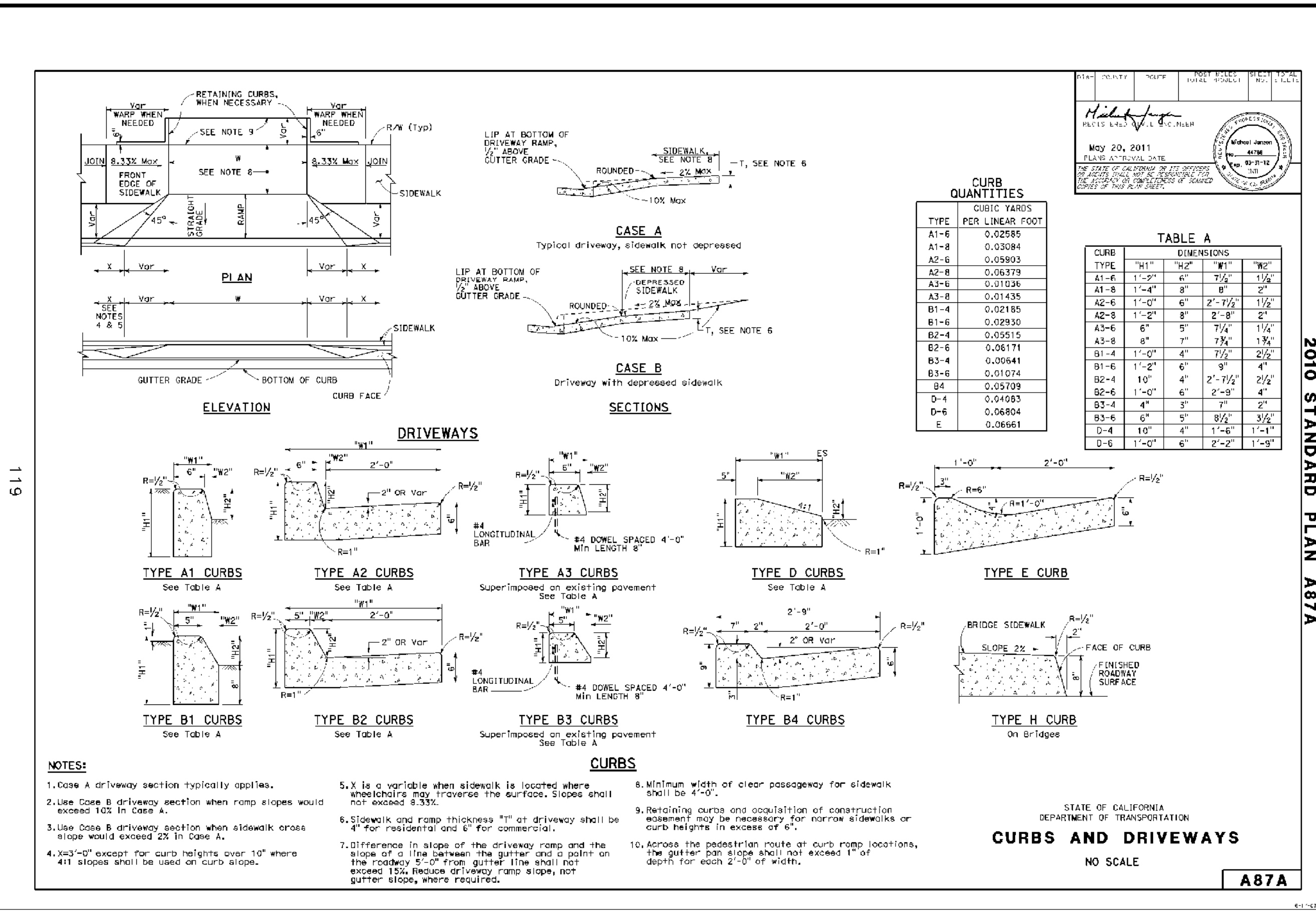
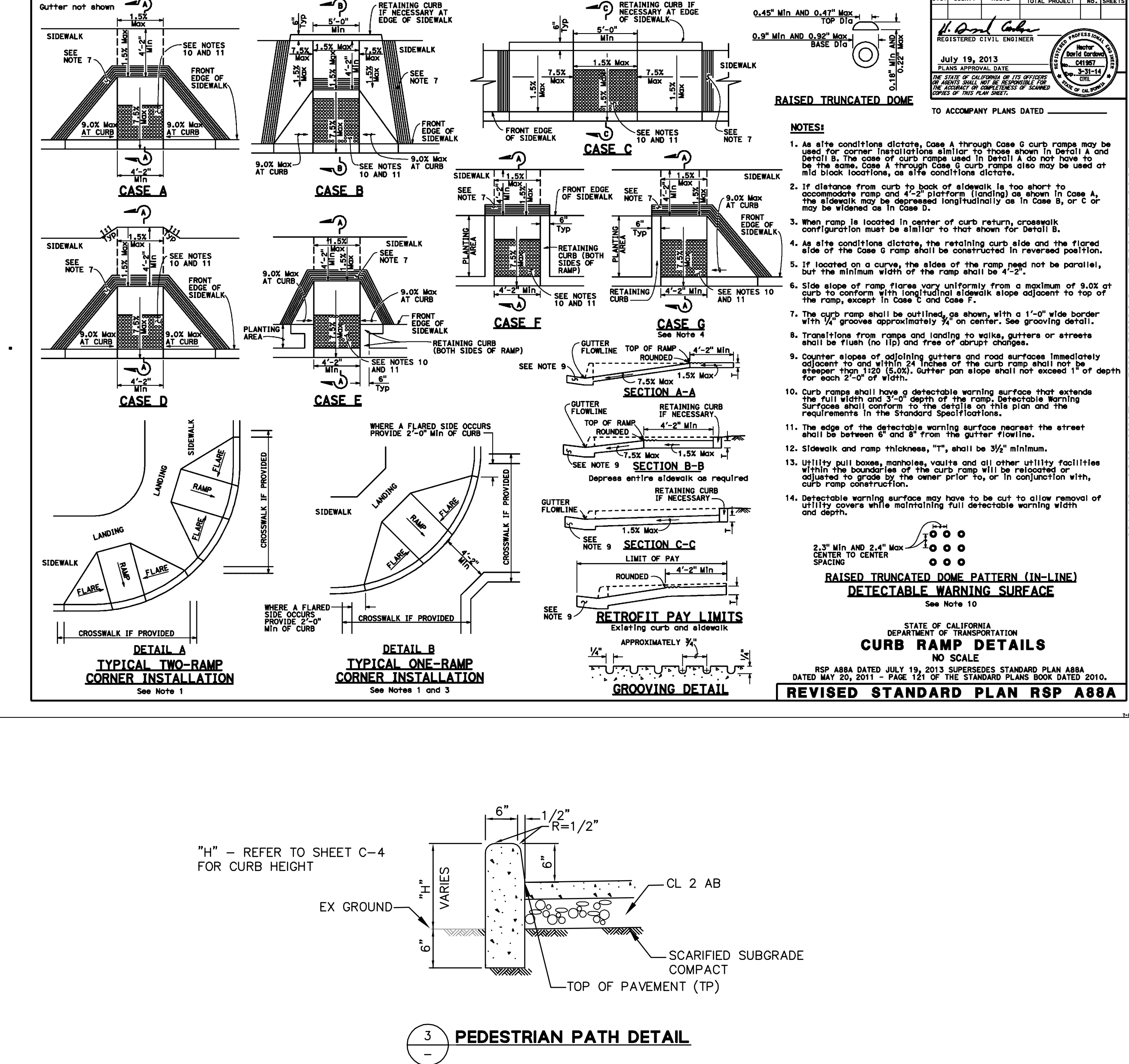
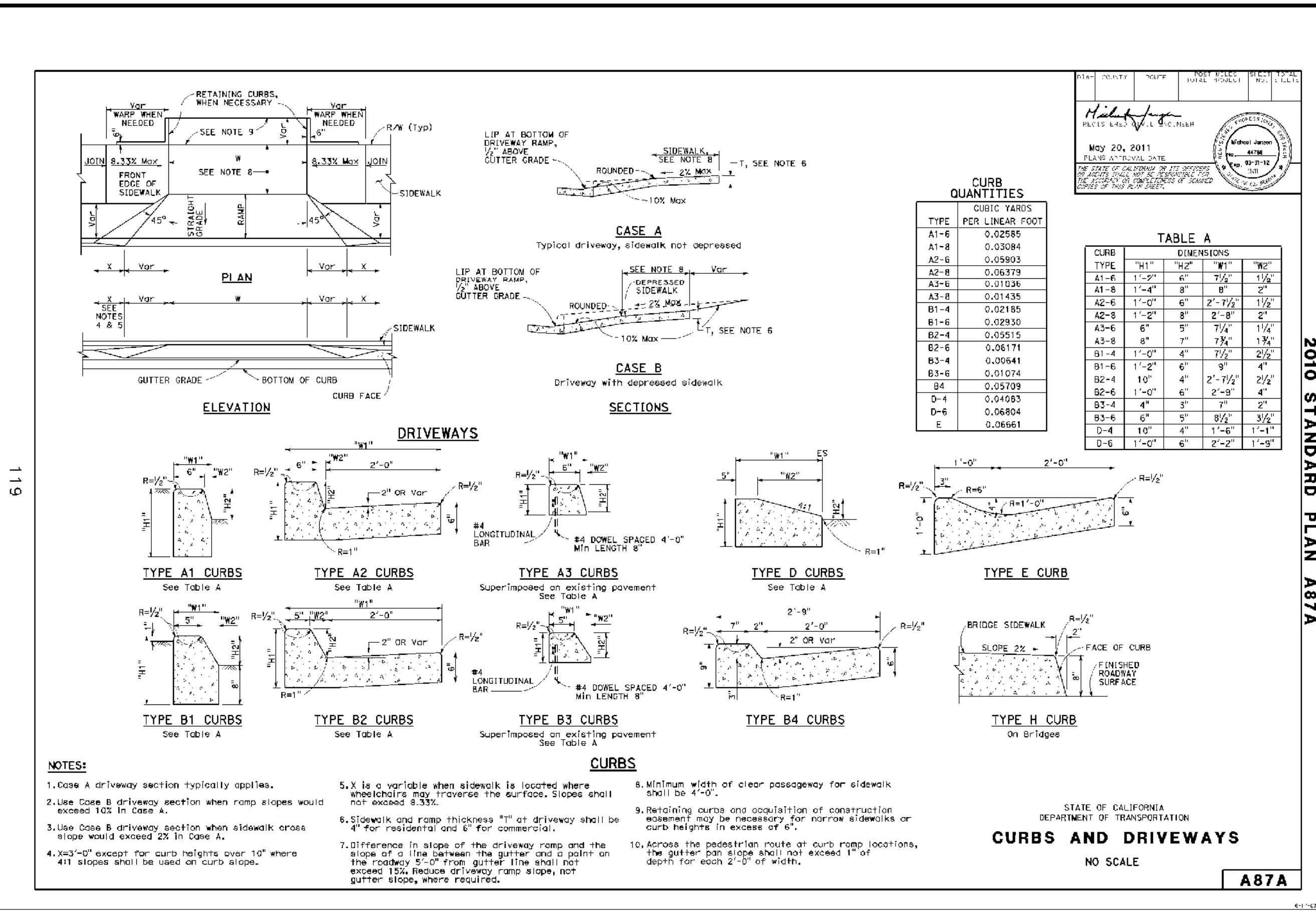
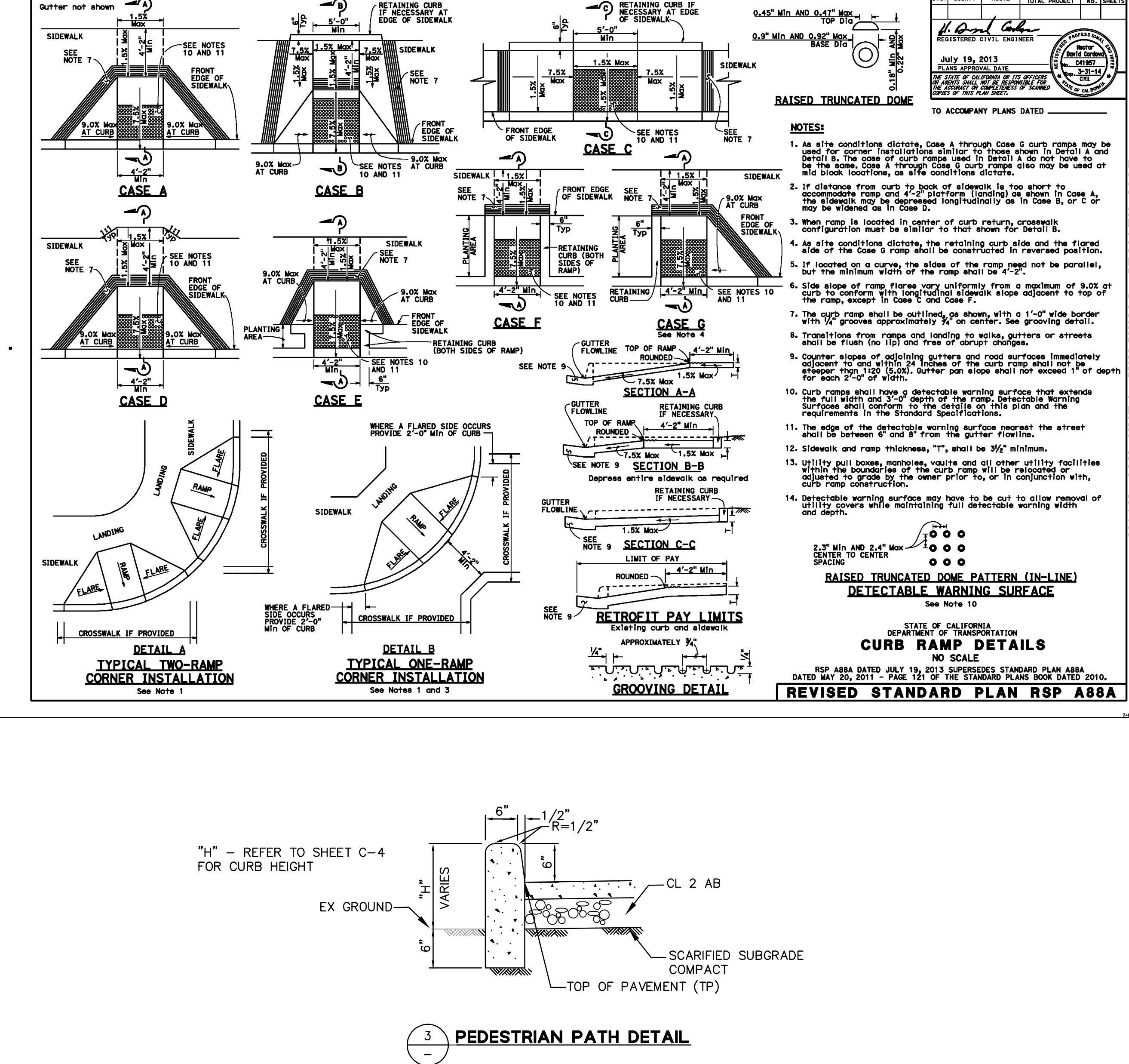
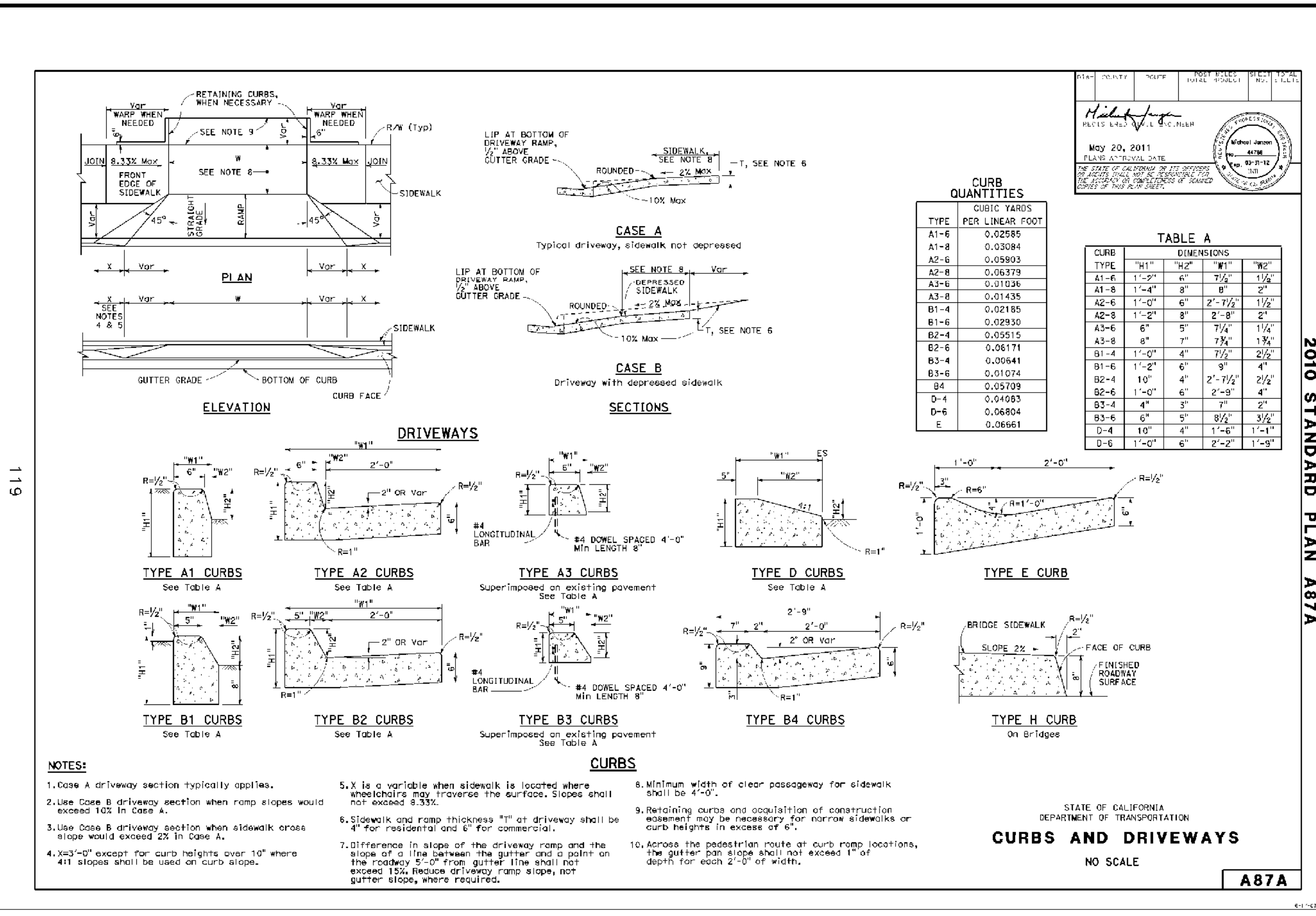
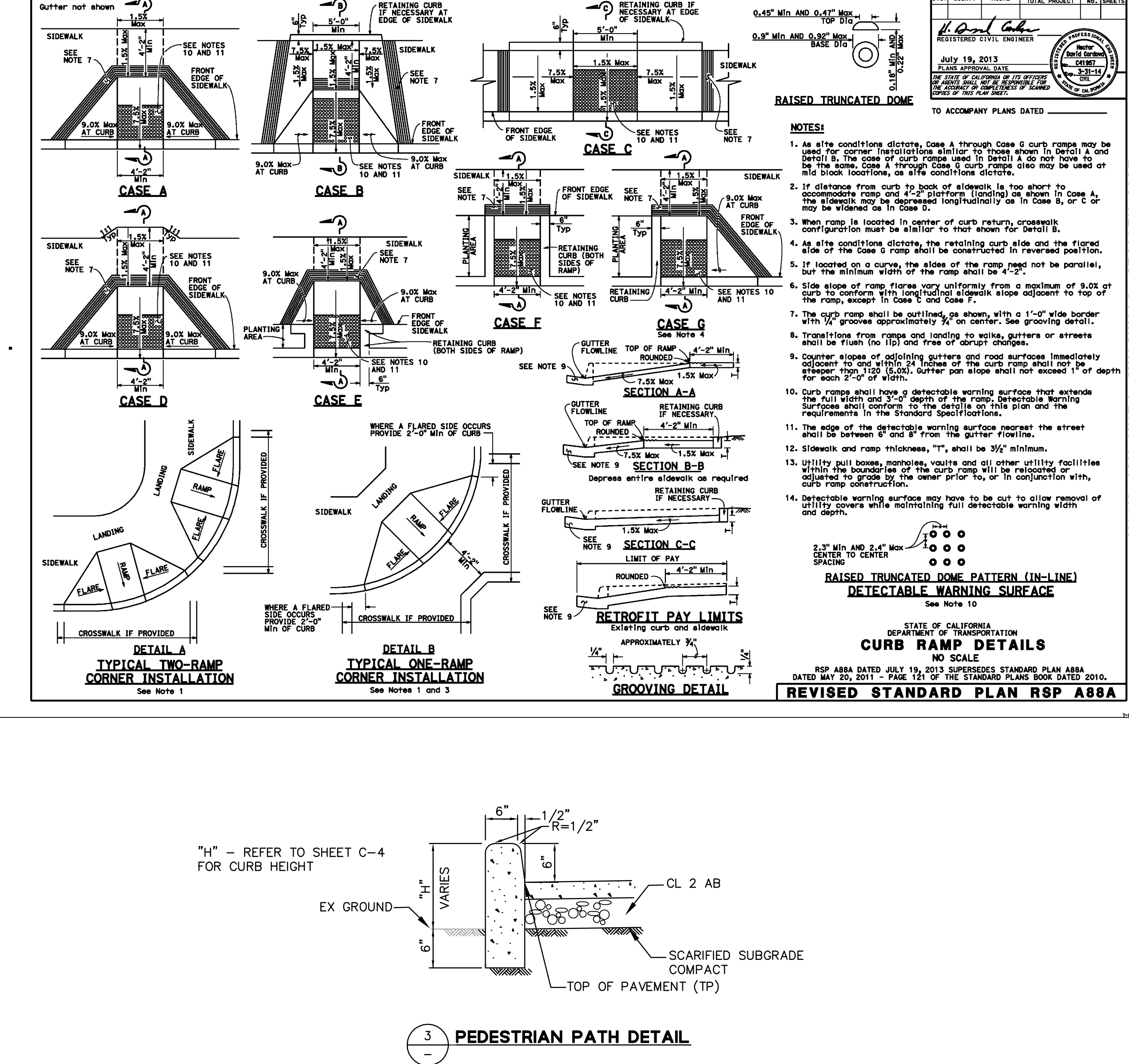
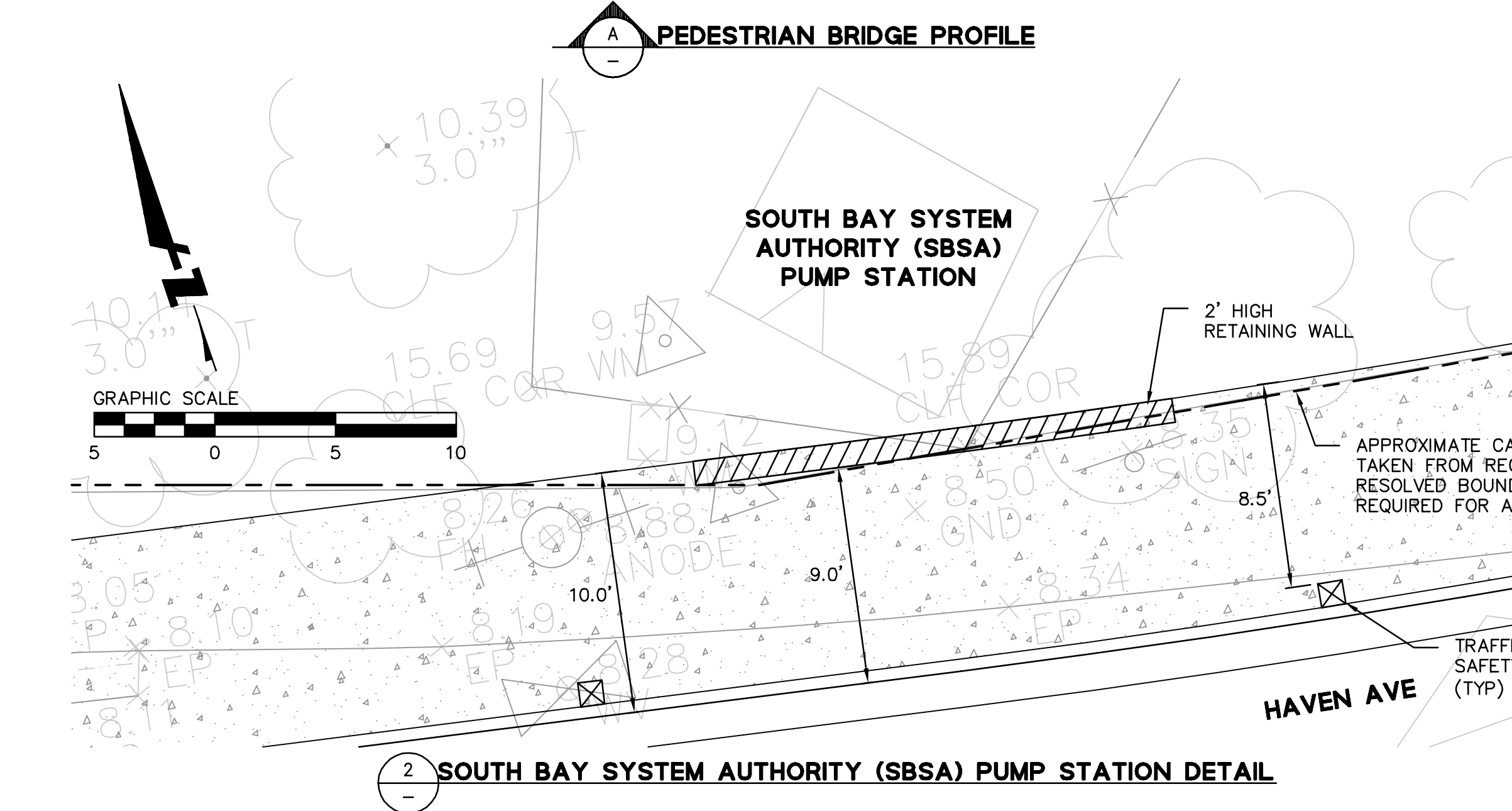
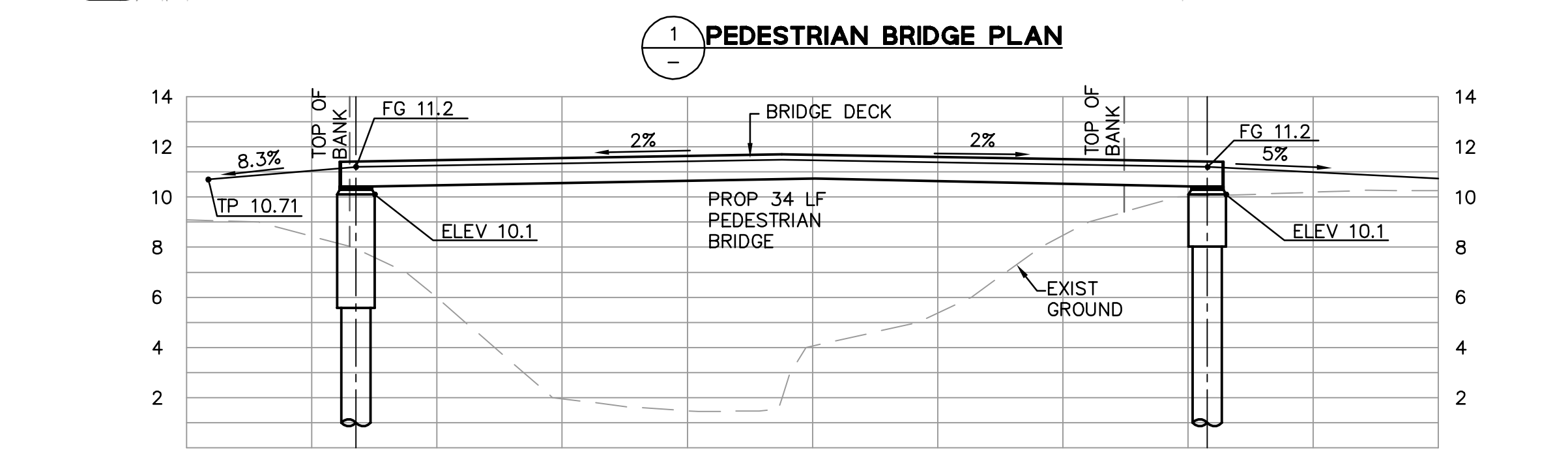
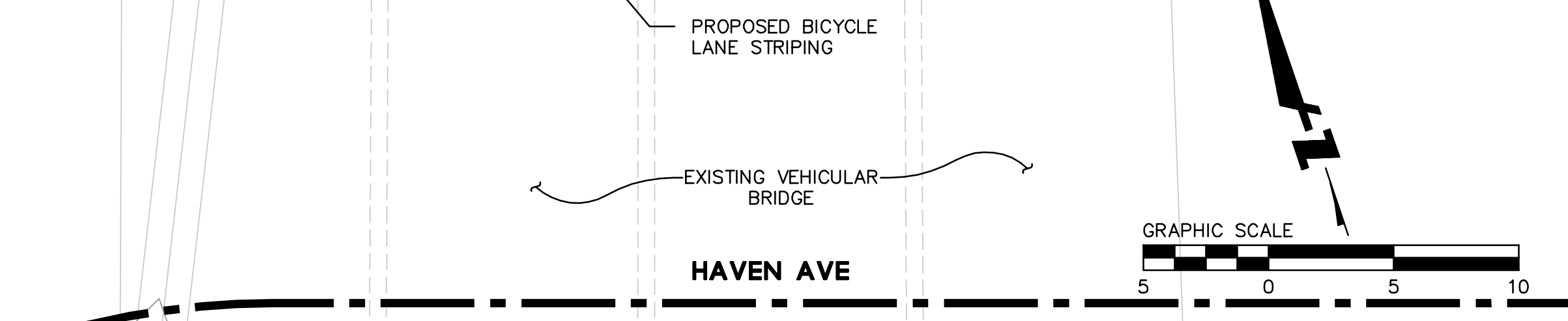
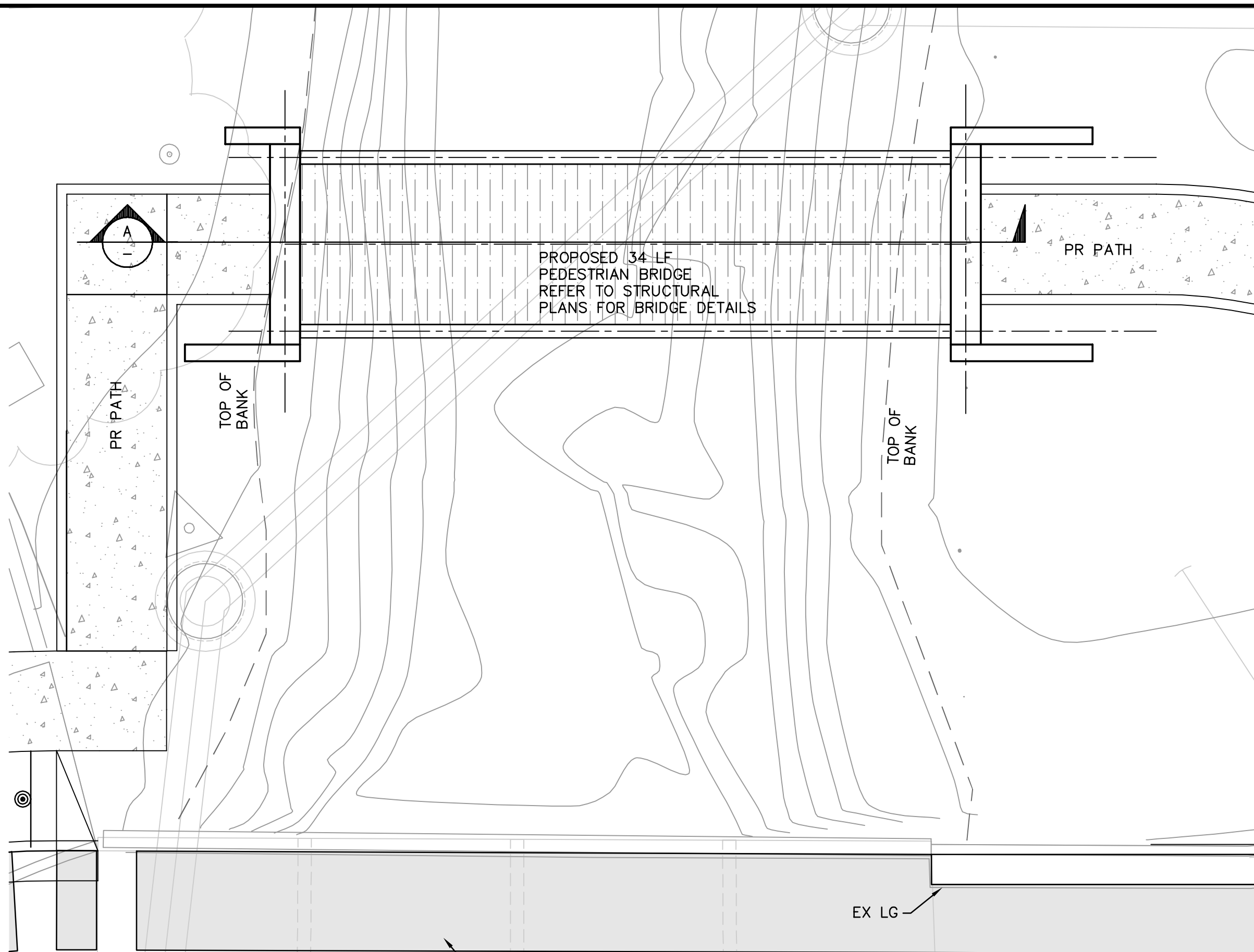
- NOTES:
1. MODIFIED DETAIL 27C SHALL BE DASHED 4" WHITE LINE WITH MATCHING DASH LENGTH OF CALTRANS DETAIL 39A.
 2. GREEN BIKE LANE SHALL BE ITHERM ALKYD THERMOPLASTIC OR APPROVED EQUAL.

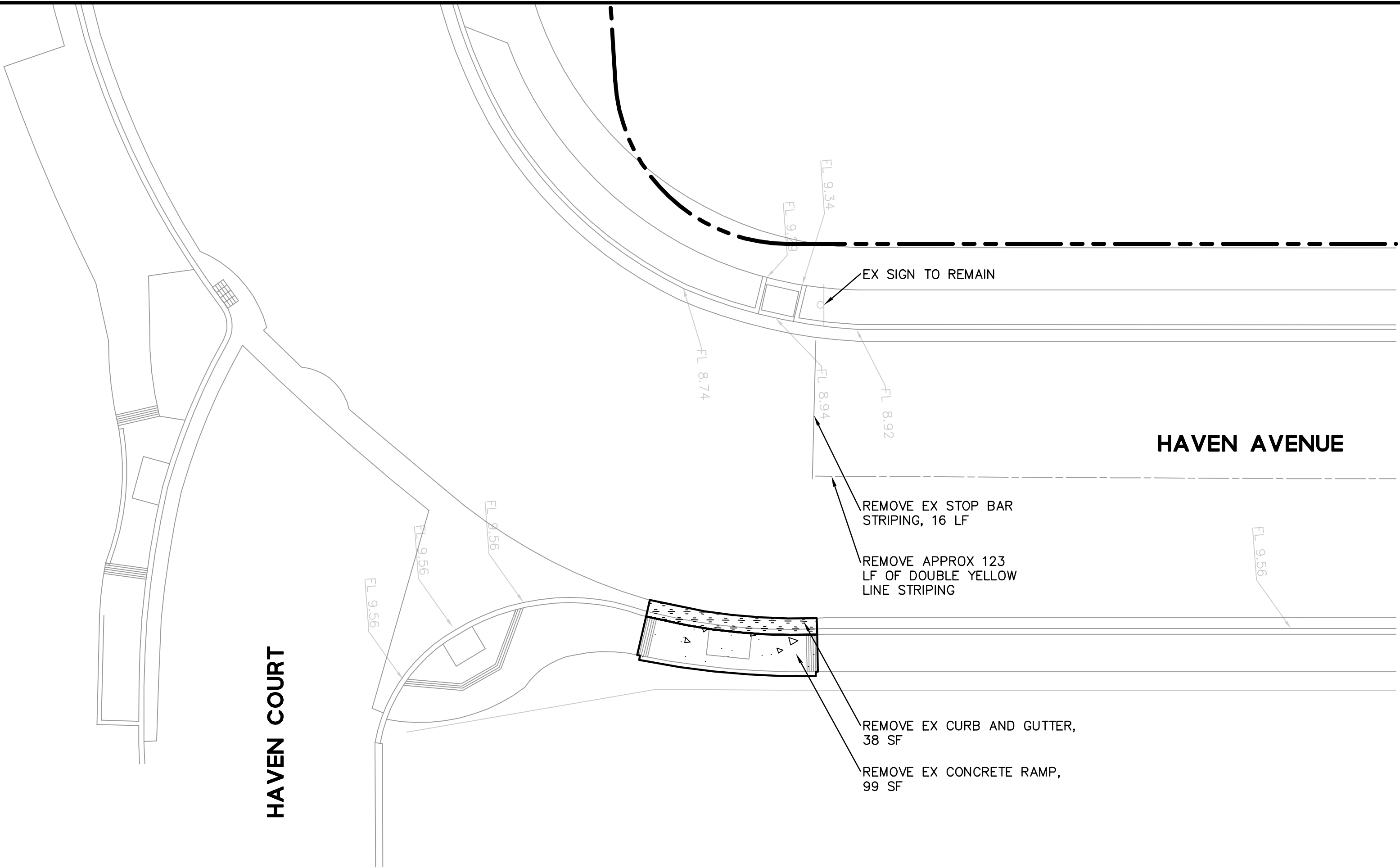
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GREEN SKIP BOXES FOR CONFLICT POINTS



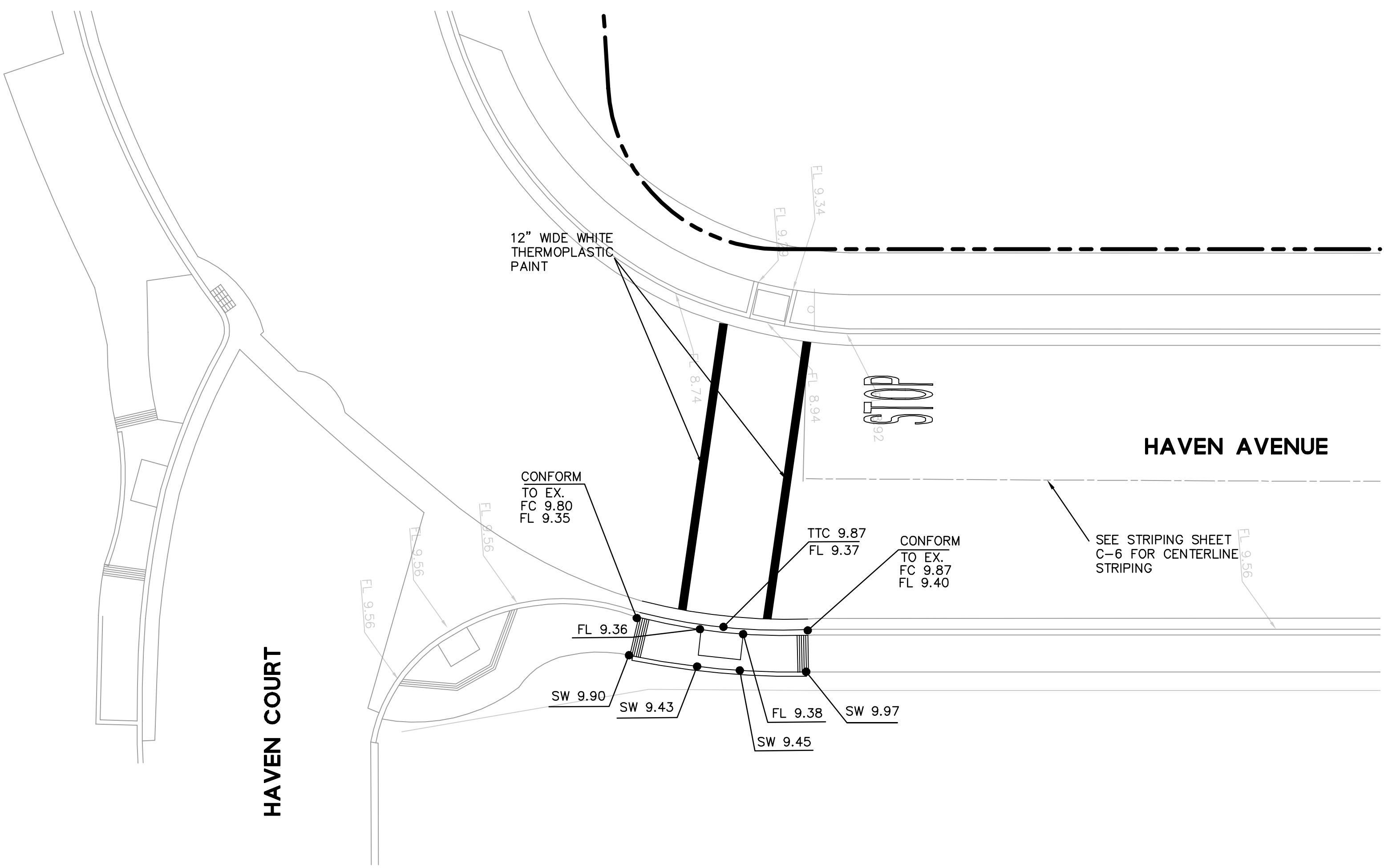
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STRIPED BUFFER

Date	Revisions	No.
03/20/2015		
Scale AS SHOWN		
Design RB		
Drawn		
Approved		
Job No 20120200-11		





EXISTING CONDITIONS AND DEMOLITION PLAN
1" = 10'



HORIZONTAL CONTROL AND GRADING PLAN
1" = 10'



Revisions	
No.	
Date	03/20/2015
Scale	AS SHOWN
Design	EM
Drawn	
Approved	
Job No	20120200-11
Drawing Number:	
C-9	
9	OF 11

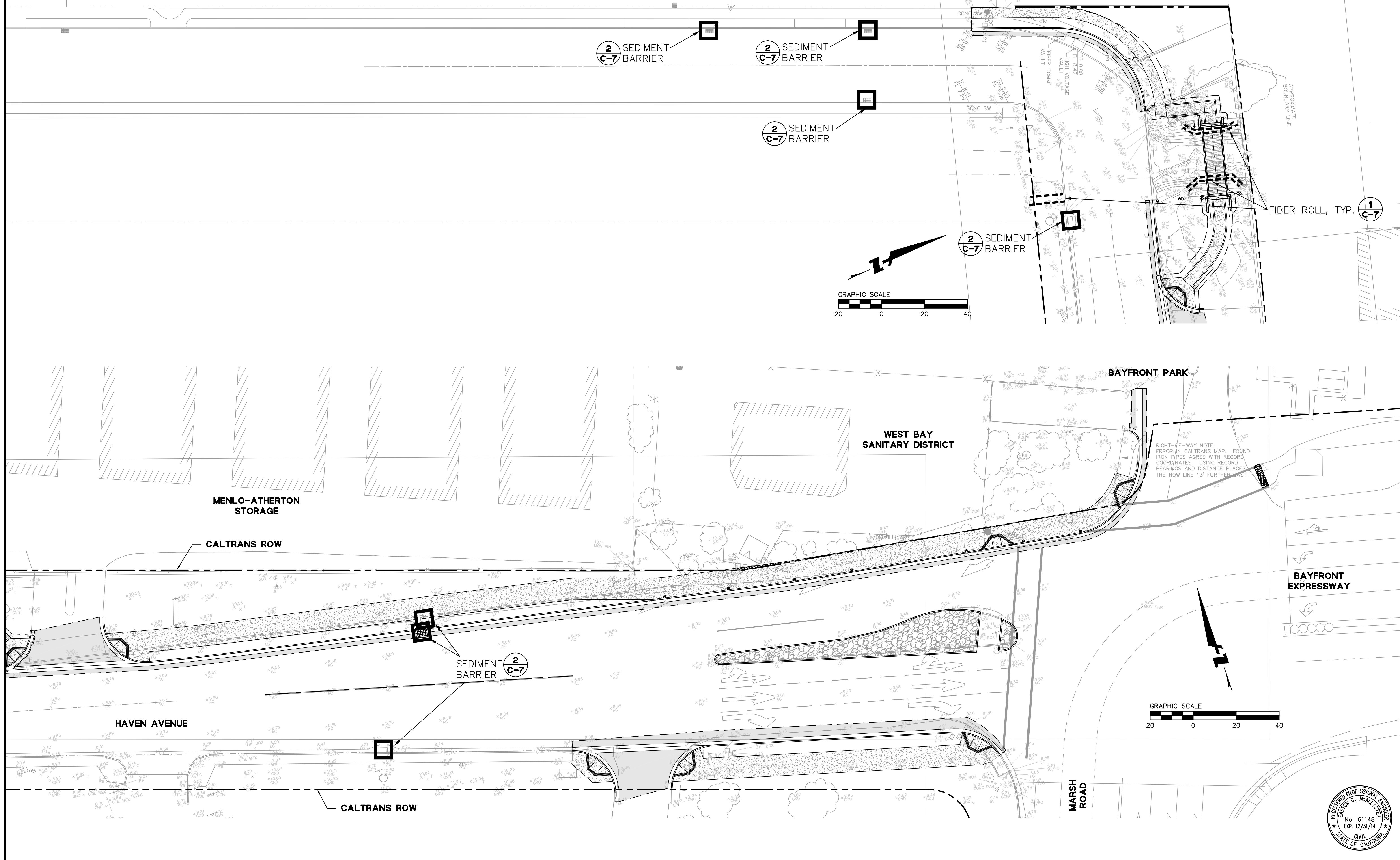
HAVEN AVENUE AT MARSH ROAD
CONCEPTUAL ROADWAY IMPROVEMENTS
HAVEN AVENUE AND HAVEN COURT INTERSECTION

MENLO PARK SAN MATEO COUNTY CALIFORNIA



BKF
ENGINEERS/PLANNERS/SURVEYORS

255 SHORELINE DRIVE, STE 200
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255 SHORELINE DRIVE, STE. 200
REDWOOD CITY, CA 94065
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Bkf
ENGINEERS/PLANNERS/SURVEYORS

DATE: 03/20/2015
SCALE: NTS
DESIGN: EM
DRAWN: EM
APPROVED:
JOB NO: 20120200-11

Revisions

No.	

Drawing Number:
C-10
10 OF 11

CONCEPTUAL DESIGN PER MITIGATION MEASURES TR-1g AND TR-2w

HAVEN AVENUE AT MARSH ROAD
CONCEPTUAL ROADWAY IMPROVEMENTS
EROSION CONTROL PLAN

CALIFORNIA
SAN MATEO COUNTY
MENLO PARK

EROSION & SEDIMENT CONTROL NOTES:

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGES TO PUBLIC AND/OR PRIVATELY OWNED AND MAINTAINED ROADS CAUSED BY THE CONTRACTOR'S GRADING ACTIVITIES AND SHALL BE RESPONSIBLE FOR THE CLEANUP OF MATERIAL SPILLED ON PUBLIC ROAD ON THE HAUL ROUTE. ADJACENT PUBLIC ROADS SHALL BE CLEANED AT THE END OF EACH WORKING DAY.

2. IMPLEMENT BEST MANAGEMENT PRACTICES PER SWPPP & NPDES REQUIREMENTS.

3. DURING CONSTRUCTION, MAINTAIN SUMMERTIME DRAINAGE THROUGHOUT THE SITE.

4. CONDUCT MAINTENANCE, MONITORING, AND INSPECTIONS ACCORDING TO BEST MANAGEMENT PRACTICES. CONDUCT TRAINING OF INSPECTION PERSONNEL PRIOR IMPLEMENTATION OF THE MONITORING PROGRAM. INCLUDE REGULAR SITE INSPECTIONS AND REPORTS IN THE MONITORING PROGRAM. IN ADDITION, PROVIDE MONITORING FORMS AND COMPLIANCE CERTIFICATION TO THE OWNER'S REPRESENTATIVE AND PROJECT ENGINEER BY JULY 1 FOR THE PREVIOUS YEARS ACTIVITIES.

5. PROVIDE THE NAME, ADDRESS AND 24 HOUR TELEPHONE NUMBER OF THE PERSON RESPONSIBLE FOR IMPLEMENTATION OF EROSION AND SEDIMENTATION CONTROL TO THE CONSTRUCTION MANAGER AND THE CITY.

6. EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL DISTURBED AREAS ARE STABILIZED. CHANGES TO THIS EROSION CONTROL PLAN SHALL BE MADE TO MEET FIELD CONDITIONS ONLY WITH THE APPROVAL OF OR AT THE DIRECTION OF THE PROJECT INSPECTOR.

7. THE EROSION CONTROL PLAN COVERS ONLY THE FIRST WINTER DURING WHICH CONSTRUCTION IS TO TAKE PLACE. PLANS ARE TO BE RESUBMITTED PRIOR TO SEPTEMBER 1ST OF EACH SUBSEQUENT YEAR UNTIL THE SITE IMPROVEMENTS ARE ACCEPTED BY THE CONSTRUCTION MANAGER, PROJECT ARCHITECT AND PROJECT ENGINEER.

8. INSPECT AND REPAIR EROSION CONTROL FACILITIES AT THE END OF EACH WORK DAY DURING THE RAINY SEASON.

9. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DURING GRADING OPERATION, BEFORE OCTOBER 1 AND PRIOR TO INSTALLATION OF THE STORM DRAINAGE SYSTEM. SUCH ADDITIONAL MEASURES WILL BE CONTINGENT UPON THE STAGE OF GRADING OPERATION. IMPLEMENT ANY ADDITIONAL EROSION CONTROL MEASURES AS REQUIRED BY THE PROJECT ENGINEER.

10. INSPECT EROSION CONTROL MEASURES AND MAKE NECESSARY REPAIRS AFTER EACH STORM EVENT.

11. THIS PLAN MAY NOT COVER SITUATIONS THAT ARISE DURING CONSTRUCTION DUE TO UNANTICIPATED FIELD CONDITIONS. KEEP SEDIMENT-LADEN STORM WATER RUNOFF FROM LEAVING THE SITE. STRAW WATTLES, SAND BAGS AND SILT FENCES SHALL BE USED BY THE CONTRACTOR ON AN AS NEEDED BASIS TO INHIBIT SILT FROM LEAVING THE SITE AND ENTERING THE STORM DRAIN SYSTEM. PROTECT DOWNSTREAM CATCH BASINS & DRAIN INLETS AS NECESSARY. EXISTING, TEMPORARY, OR PERMANENT CATCH BASINS SHALL USE ONE OF THE SEDIMENT BARRIERS OR INSERTS LISTED ABOVE UNTIL UPSTREAM SOILS ARE STABILIZED.

12. OBTAIN REQUIRED PERMITS PRIOR TO COMMENCING CONSTRUCTION ACTIVITIES.

13. PROTECT BORROWED AND TEMPORARY STOCKPILES WITH APPROPRIATE EROSION CONTROL MEASURES (TARPS, STRAW WATTLES, SILT FENCES ETC.) TO ENSURE SILT DOES NOT LEAVE THE SITE OR ENTER THE STORM DRAIN SYSTEM.

14. TRUCK TIRES SHALL BE CLEAN PRIOR TO EXITING THE PROPERTY.

15. DURING PERIODS WHEN STORMS ARE FORECAST –

A. DO NOT PLACE EXCAVATED SOILS IN STREETS OR ON PAVED AREAS.

B. WHERE STOCKPILING IS NECESSARY, USE A TARPULIN OR SURROUND THE STOCKPILED MATERIAL WITH STRAW BALES, SILT FENCE, OR OTHER RUNOFF CONTROLS.

C. SWEEP ALL PAVED AREAS EXPOSED TO SOIL EXCAVATION AND PLACEMENT.

DURING PERIODS WHEN STORMS ARE NOT FORECAST –

A. PREVENT STOCKPILED MATERIAL FROM ENTERING THE STORM DRAIN SYSTEM.

B. REMOVE LOOSE SOIL VIA SWEEPING FOLLOWING REMOVAL OF DIRT.

16. OBTAIN A CURRENT STORM WATER POLLUTION PREVENTION PLAN AND KEEP IT ON SITE AT ALL TIMES. IN ADDITION, REVIEW THE SWPPP AND MAINTAIN THE SITE AS REQUIRED.

17. COVER EXPOSED SOIL AT STREET / SIDEWALK LEVEL WITH EROSION CONTROL, BLANKET NORTH AMERICAN GREEN S75BN, OR APPROVED EQUIVALENT.

18. GRAVEL MATERIAL IN SACK SHALL BE PEA GRAVEL.

19. CONSTRUCT SACKS OF WOVEN POLYPROPYLENE, POLYETHYLENE OR POLYAMIDE FABRIC MINIMUM FABRIC WEIGHT IS 4 OUNCES PER SQUARE YARD AND THE MULLEN BURST STRENGTH SHOULD EXCEED 300 PSI. MATERIALS SHOULD CONFORM TO ASTM D3786 AND HAVE ULTRAVIOLET STABILITY IN EXCESS OF 70 PERCENT ACCORDING TO ASTM D4355. BURLAP IS NOT ACCEPTABLE.

20. GRAVEL SACKS SHALL BE AT LEAST 4" HIGHER THAN THE FIBER ROLL AT THE NEAREST CATCH BASIN.

21. INSPECT SACKS BEFORE AND AFTER A RAIN EVENT AND WEEKLY DURING THE WET SEASON.

22. RESHAPE BARRIER OR REPLACE GRAVEL SACKS AS NEEDED.

23. REPAIR WASHOUTS OR OTHER DAMAGE CAUSED BY CONSTRUCTION ACTIVITIES.

24. REMOVE SILT WHEN THE DEPTH REACHES ONE-THIRD OF THE BARRIER HEIGHT.

25. PREVENT WATER FROM FLOWING AROUND THE ENDS OF THE BARRIER.

26. FROM MAY THROUGH OCTOBER, DO NOT ALLOW WATER TO POND BEHIND GRAVEL SACK BARRIERS FOR MORE THAN 7 DAYS.

27. REMOVE GRAVEL SACKS AT THE END OF THE CONSTRUCTION PERIOD OR WHEN THE SITE HAS BEEN STABILIZED.

28. FILL OUT THE REQUIRED ANNUAL COMPLIANCE FORM AND SEND TO THE REGIONAL WATER QUALITY CONTROL BOARD, IF THE PROJECT LASTS LONGER THAN 1 YEAR.

29. MAINTAIN EROSION CONTROL MEASURES UNTIL DISTURBED AREAS ARE STABILIZED. MAKE CHANGES TO THIS EROSION CONTROL PLAN TO MEET FIELD CONDITIONS WITH THE APPROVAL OF OR AT THE DIRECTION OF THE PROJECT INSPECTOR PRIOR TO IMPLEMENTING THE MODIFICATIONS.

30. ALTHOUGH SPECIFIC LOCATIONS FOR SEDIMENT CONTROL FACILITIES ARE SHOWN ON THESE PLANS, MODIFY THIS EROSION CONTROL PLAN WHEN NECESSARY TO MEET FIELD CONDITIONS.

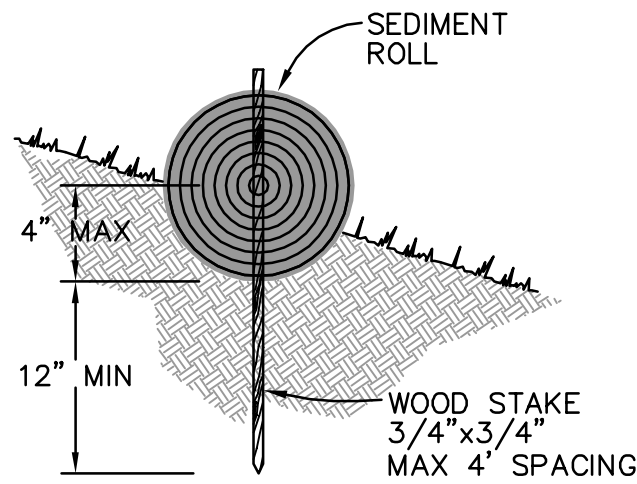
31. UPDATE THE PLANS TO REFLECT CHANGING SITE CONDITIONS. BASE PLAN UPDATES UPON GENERAL SURVEY DATA. MONITOR EROSION CONTROL EFFECTIVENESS AND UPGRADE THE PLANS, AS REQUIRED, TO PREVENT SIGNIFICANT QUANTITIES OF SEDIMENT FROM ENTERING THE DOWNSTREAM DRAINAGE SYSTEM.

DUST CONTROL NOTES:

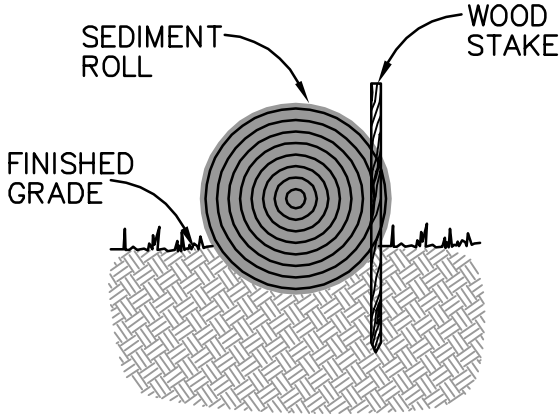
THE DUST CONTROL PROGRAM SHALL INCLUDE THE FOLLOWING MEASURES FROM TABLE 2 OF THE BAAQMD CEQA GUIDELINES AS APPLICABLE AND FEASIBLE.

1. WATER ALL ACTIVE CONSTRUCTION AREAS AT LEAST TWICE DAILY
2. COVER ALL TRUCKS HAULING SOIL, SAND, AND OTHER LOOSE MATERIALS OR PROVIDE AT LEAST TWO FEET OF FREEBOARD
3. PAVE, APPLY WATER THREE TIMES DAILY, OR APPLY NON-TOXIC SOIL STABILIZERS ON ALL UNPAVED ACCESS ROADS, PARKING AREAS, AND STAGING AREAS CONSTRUCTION SITES.
4. SWEEP STREETS DAILY IF VISIBLE SOIL MATERIAL IS CARRIED ONTO ADJACENT PUBLIC STREETS.

5. ENCLOSE, COVER, WATER TWICE DAILY, OR APPLY NON-TOXIC SOIL BINDERS TO EXPOSED STOCKPILES (DIRT, SAND, ETC.)
6. LIMIT TRAFFIC SPEEDS ON UNPAVED ROADS TO 15 MPH.
7. REPLANT VEGETATION IN DISTURBED AREAS AS QUICKLY AS POSSIBLE.
8. SUSPEND ALL GRADING ACTIVITY WHEN SUSTAINED WINDS EXCEED 25 MPH.



ENTRENCHMENT DETAIL
IN SLOPE AREA



ENTRENCHMENT DETAIL
IN FLAT AREA

NOTES:

1. USE REED & GRAHAM, INC. GEOSYNTHETICS STRAW WATTLE FIBER ROLL (COMES IN 9" X 25' ROLLS) OR APPROVED EQUIVALENT.
2. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE FIBER ROLL IN A TRENCH, 3" – 5" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND FIBER ROLL.
3. THE TOP OF THE STRUCTURE (PONDING HEIGHT) MUST BE WELL BELOW THE GROUND ELEVATION DOWNSLOPE TO PREVENT RUNOFF FROM BY-PASSING THE INLET. EXCAVATION OF A BASIN ADJACENT TO THE DROP INLET OR A TEMPORARY DIKE ON THE DOWNSLOPE OF THE STRUCTURE MAY BE NECESSARY.
4. IN PAVED AREAS, USE SAND BAGS TO SECURE FIBER ROLLS IN PLACE OF WOOD STAKE.

1
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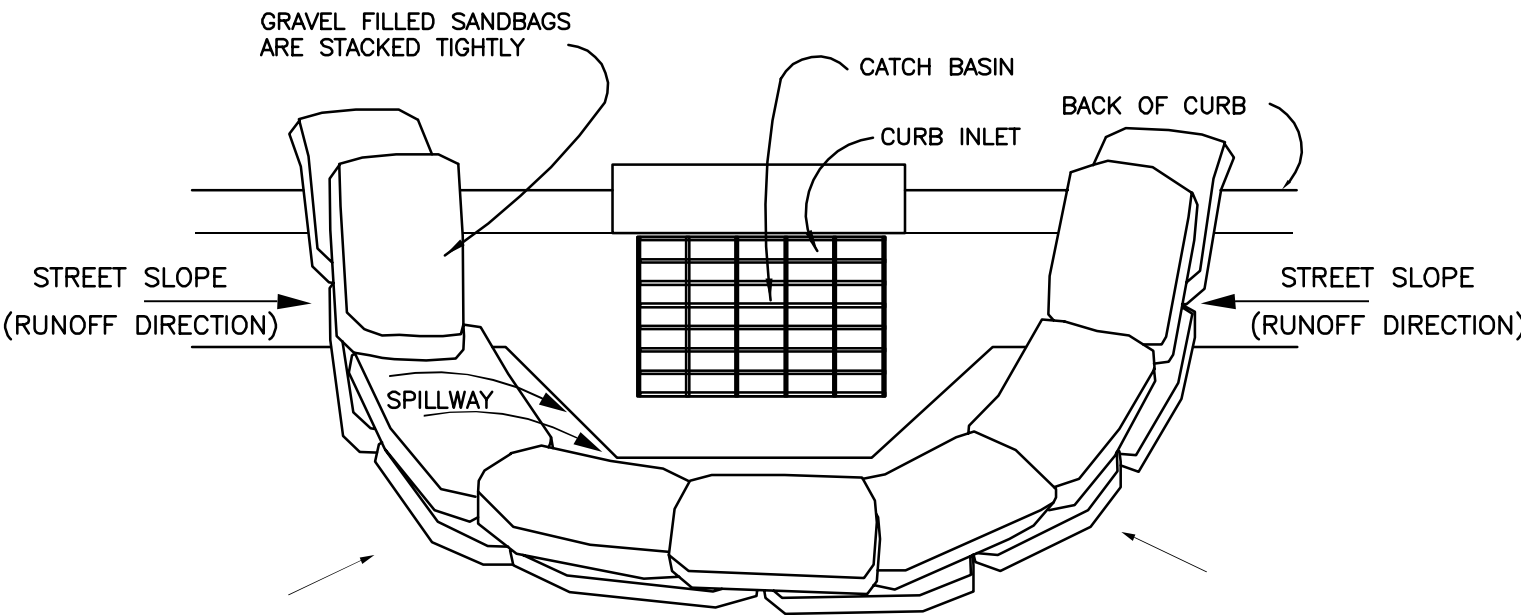
FIBER ROLL

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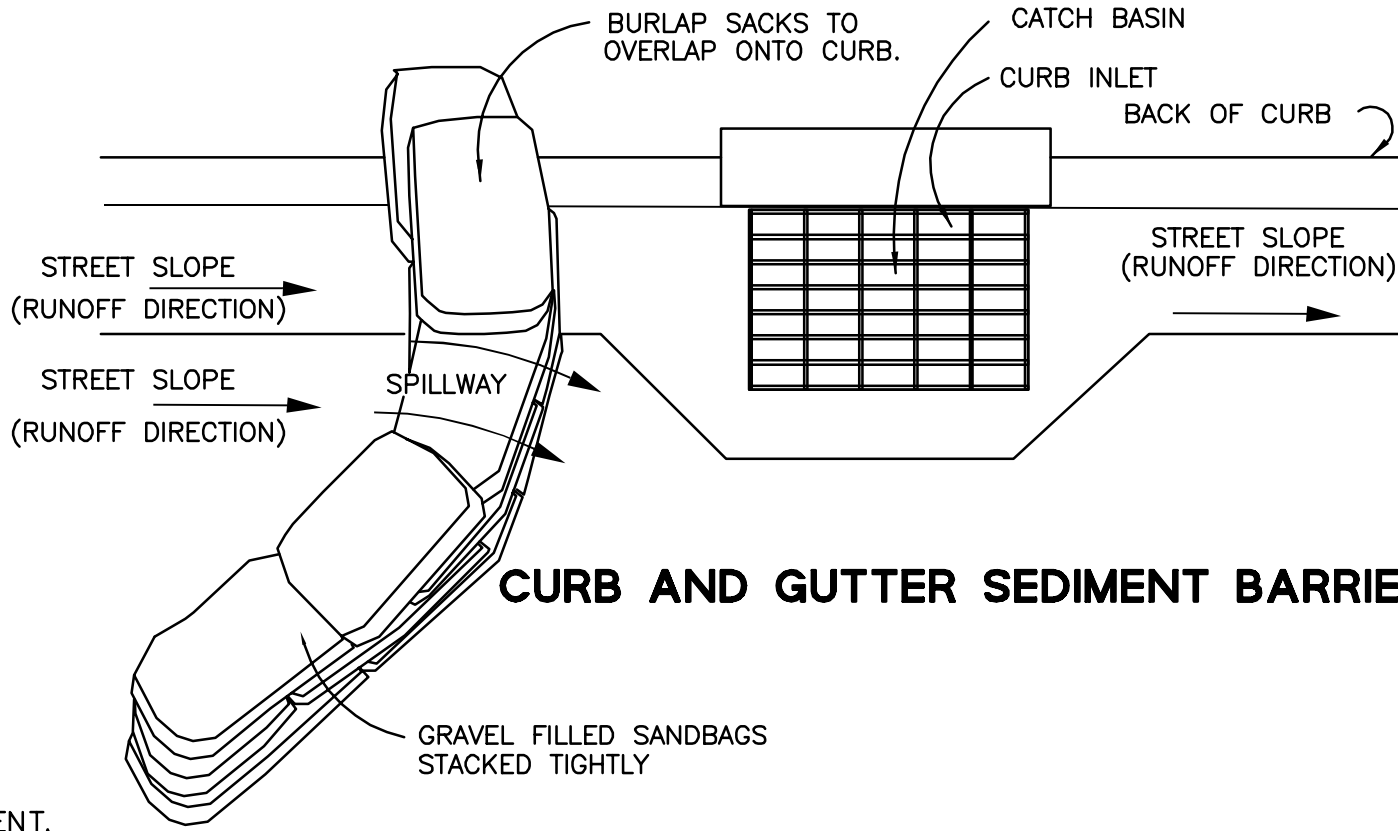
2
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SEDIMENT BARRIER

SCALE: NTS



CURB INLET SEDIMENT BARRIER



CURB AND GUTTER SEDIMENT BARRIER

NOTES:

1. PLACE CURB TYPE SEDIMENT BARRIERS ON GENTLY SLOPING STREETS, WHERE WATER CAN POND AND ALLOW SEDIMENT TO SEPARATE FROM RUNOFF.
2. SANDBAGS OF EITHER BURLAP OR WOVEN GEOTEXTILE FABRIC, ARE FILLED WITH GRAVEL, LAYERED AND PACKED TIGHTLY
3. LEAVE ONE SANDBAG GAP IN THE TOP ROW TO PROVIDE A SPILLWAY OVERFLOW. TOP OF SPILLWAY SHALL BE LOWER THAN TOP OF CURB.
4. INSPECT BARRIERS AND REMOVE SEDIMENT AFTER EACH STORM EVENT, SEDIMENT AND GRAVEL MUST BE REMOVED FROM THE TRAVELED WAY IMMEDIATELY.



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HAVEN AVENUE AT MARSH ROAD
CONCEPTUAL ROADWAY IMPROVEMENTS
EROSION CONTROL NOTES AND DETAILS

CALIFORNIA

SAN MATEO COUNTY

MENLO PARK

Revisions	No.	Date
Scale NTS	03/20/2015	
Design EM		
Drawn AV		
Approved		
Job No 20120200-11		
Drawing Number:	C-11	
	11	OF 11

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RESOLUTION NO. _____

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MENLO PARK
AUTHORIZING THE INSTALLATION OF A "NO PARKING" ZONE ON THE
NORTH SIDE OF HAVEN AVENUE

WHEREAS, in conjunction with the addition of new bicycle and pedestrian facilities on Haven Avenue, of on-street parking on the north side of Haven Avenue must be eliminated; and,

WHEREAS, at the August 10, 2015 Bicycle Commission meeting, the commission unanimously passed a motion to support staff's recommendation for the installation of a "No Parking" zone on the north side of Haven Avenue; and,

WHEREAS, at the August 12, 2015 Transportation Commission meeting, the commission unanimously passed a motion to support staff's recommendation for the installation of a "No Parking" zone on the north side of Haven Avenue; and,

WHEREAS, the City of Menlo Park, acting by and through its City Council, having considered and been fully advised in the matter and good cause appearing therefore.

NOW, THEREFORE, BE IT RESOLVED, the City Council of Menlo Park does hereby authorize the installation of a "No Parking" zone on the north side of Haven Avenue.

I, Pam Aguilar, City Clerk of Menlo Park, do hereby certify that the above and foregoing Council Resolution was duly and regularly passed and adopted at a meeting by said Council on the 20th day of October, 2015, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this 20th day of October, 2015.

Pamela Aguilar
City Clerk

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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-162-CC****Consent Calendar:**

Adopt a Resolution Stating the City Council's Support for the Concept of Expanding the Menlo-Atherton Little League Snack Bar and Storage Facility Adjacent to the Athletic Fields at Burgess Park

Recommendation

Adopt a resolution stating the City Council's support for the concept of expanding the Menlo-Atherton Little League snack bar and storage facility adjacent to the athletic fields at Burgess Park.

Policy Issues

This resolution does not commit the City of Menlo Park to financial support nor does it exempt the project from any approval processing requirements or municipal code requirements. It simply allows the City Council to discuss and, if adopted, support the concept of expanding the Little League's facility, subject to normal project review process and compliance with municipal code requirements.

Background

Currently, the Little League operates a snack bar adjacent to the athletic fields at Burgess Park. Proceeds from the snack bar are used to support the operation of the league. However, the primary use of the facility is to enhance the experience of families and players attending games. There is also limited storage capacity for Little League equipment at the facility. Due to the limited storage capacity and a desire to enhance the snack bar and food options, the Little League has begun planning to expand the facility.

Unrelated to the Little League's interest in expanding their facility, the owner of Foster's Freeze on Oak Grove has announced his retirement and closed the business. Having been in business for over 50 years in Menlo Park, Foster's Freeze has served generations of patrons. Foster's Freeze has been the site of innumerable post-game celebrations.

On September 21st, Council Member Mueller, on behalf of Mayor Carlton and himself, submitted a request that a resolution of the City Council be agendized for discussion and action.

Analysis

This confluence of seemingly unrelated events has provided the City with a unique opportunity to support the possibility of the Little League expanding its snack bar and storage facility, while also preserving a beloved Menlo Park tradition. The Little League has expressed an interest in investigating the possibility of

incorporating some of the Foster's Freeze elements or signage in the design of their new facility. This possible incorporation would help mitigate the loss of Foster's Freeze.

Should the City Council adopt this resolution (Attachment A), the City is not committing any financial support of the project or exempting the proposal from any approval processing requirements. However, it would provide the Little League with direction to begin investigating opportunities for fundraising and design options for their new facility. Any modification to or expansion of the facility would go through the City's normal process and would have to comply with the City's municipal code.

Impact on City Resources

There is no impact on City resources.

Environmental Review

Any further action would require environmental review.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. Draft Resolution

Report prepared by:
Jim Cogan, Economic Development Manager

RESOLUTION NO.

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MENLO PARK
STATING THE CITY COUNCIL'S SUPPORT FOR THE CONCEPT OF
EXPANDING THE MENLO-ATHERTON LITTLE LEAGUE SNACK BAR
AND STORAGE FACILITY ADJACENT TO THE ATHLETIC FIELDS AT
BURGESS PARK**

WHEREAS, the Menlo-Atherton Little League operates a snack bar adjacent to the athletic fields at Burgess Park; and

WHEREAS, due to the limited storage capacity and a desire to enhance the snack bar and food options, the Little League has begun planning to expand the facility, subject to City review and approval; and

WHEREAS, the Little League has expressed an interest in investigating the possibility of incorporating some of the Foster's Freeze elements or signage in the design of their new facility; and

WHEREAS, the City is not committing any financial support of the project or exempting the proposal from any approval processing requirements, nor exempting the compliance with the City of Menlo Park Municipal Code.

NOW, THEREFORE BE IT RESOLVED, that the City of Menlo Park, acting by and through its City Council, having considered and been fully advised in the matter and good cause appearing therefore does hereby state the support for the concept of expanding the Menlo-Atherton Little League snack bar and storage facility adjacent to the athletic fields at Burgess Park, subject to compliance with the City's municipal code and normal approval process.

I, Pamela Aguilar, City Clerk of Menlo Park, do hereby certify that the above and foregoing Council Resolution was duly and regularly passed and adopted at a meeting by said Council on the twentieth day of October, 2015, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this twentieth day of October, 2015.

Pamela Aguilar
City Clerk

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RESOLUTION NO.

**RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MENLO PARK
STATING THE CITY COUNCIL'S SUPPORT FOR THE CONCEPT OF
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ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this twentieth day of October, 2015.

Pamela Aguilar
City Clerk

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**SPECIAL AND REGULAR MEETING MINUTES - Draft**

Date: 8/25/2015
Time: 6:00 p.m.
City Council Chambers
701 701 Laurel St., Menlo Park, CA 94025

Closed Session (City Hall Administration Building, 1st floor conference room)

Mayor Carlton called the Closed Session to order at 6:00 p.m.

Roll Call

Present: Carlton, Cline, Keith, Mueller, Ohtaki

Absent: None

Staff: City Manager Alex McIntyre, City Attorney Bill McClure, Interim Administrative Services Director Nick Pegueros, Interim Finance Director Clay Curtin, Human Resources Director Gina Donnelly, Labor Counsel Charles Sakai

- CL1. Closed Session pursuant to Government Code Section §54957.6 to confer with labor negotiators regarding labor negotiations with Service Employees International Union (SEIU), American Federation of State, County and Municipal Employees (AFSCME) and Police Officers' Association (POA)

Public Comment

- Virginia Parks, Engineer, spoke regarding the employee vision program
- Ralph Bonhert, Computer Support Technician, spoke regarding proposed salary increase
- Mary Jane Salinas, Development Services Technician, spoke regarding the cost of living
- Gonee Sepulveda, Community Services Officer, submitted a written statement regarding the cost of living ([Attachment](#))

- CL2. Closed Session pursuant to Government Code Section §54946.8 to meet with real property negotiators, City Attorney Bill McClure and City Manager Alex McIntyre, regarding potential sale of real property commonly known as 1467 Chilco Street, Menlo Park, to the Menlo Park Fire Protection District, including but not limited to instructions regarding sales price and other terms of sale

Attendees: City Manager Alex McIntyre, City Attorney Bill McClure

Regular Session

Mayor Carlton called the Regular Session to order at 7:25 p.m.

Roll Call

Present: Carlton, Cline, Keith, Mueller, Ohtaki

Absent: None

Staff: City Manager Alex McIntyre, City Attorney Bill McClure, City Clerk Pamela Aguilar

Mayor Carlton led the pledge of allegiance.

Report from Closed Session

There was no reportable action from the Closed Session held earlier this evening.

Announcements

City Manager Alex McIntyre announced the appointment of Nick Pegueros as Interim Administrative Services Manager and Clay Curtin as Interim Finance Director

At this time, Mayor Carlton called Item B, Presentations, 1 out of order.

- B1.** Presentation by Bill Chiang of PG&E regarding community pipeline safety initiative involving tree removal and restoration ([Presentation](#))

Government Affairs Liaisons Bill Chiang and Darin Cline gave the presentation.

At this time, Mayor Carlton called Item C, Public Comment, out of order.

C. Public Comment

- Catherine Martineau, Executive Director of Canopy and Board Member of California Relief, spoke regarding the benefit of mature trees and ecosystems, aerial patrols and other mitigation measures
- Dave Stoff spoke regarding water meter billing in Sharon Glen
- Brooke Cotter spoke regarding the Alma/Ravenswood traffic pattern and safety concerns
- Andrew Boone urged the Council to consider raising the minimum wage
- Cecilia Marihart, Bradley's Fine Diner, spoke regarding the opening of a new gourmet hotdog stand Bradley's Funky Franks

At this time, Mayor Carlton called Item D, Consent Calendar, out of order.

D. Consent Calendar

Mayor Carlton pulled Item D-10.

- D1. Adopt **Resolution 6285** of the Successor Agency to the Community Development Agency of the City of Menlo Park confirming approval of the issuance of bonds, approving the preliminary and final official statements, and approving other official actions required with respect to the issuance of the refunding bonds ([Staff Report #15-129-CC](#))
- D2. Adopt **Resolution 6286** approving the revised investment policy for the City and the former Community Development Agency of Menlo Park ([Staff Report #15-130-CC](#))
- D3. Authorize the City Manager to enter into an agreement with Bay Area Water Supply and Conservation Agency (BAWSCA) not to exceed \$80,000 to provide direct rebates to residents and businesses for the Lawn Be Gone program ([Staff Report #15-141-CC](#))
- D4. Authorize the City Manager to execute agreements with the Peninsula Corridor Joint Powers Board for the operations and funding of the City's Shuttle Program for Fiscal Year 2015-2016 ([Staff Report #15-138-CC](#))
- D5. Award a construction contract to W. Bradley Electric, Inc. (WBE) for the Willow Road Traffic Signal Modification Project in the amount of \$229,490 and appropriate \$18,760 from the Traffic Impact Fee Fund balance and authorize a total construction contract budget of \$283,913 ([Staff report #15-137-CC](#))
- D6. Approve the response to the San Mateo County Grand Jury Report "Flooding Ahead: Planning for Sea Level Rise" ([Staff Report #15-133-CC](#))
- D7. Approve **Resolution 6287** authorizing the annual destruction of obsolete records ([Staff Report #15-139-CC](#))
- D8. Approve **Resolution 6288** updating the City's Conflict of Interest Code ([Staff Report #15-135-CC](#))
- D9. Authorize the City Manager to approve a contract with Cardinals Rules in an amount not to exceed \$66,588.50 for youth and adult sports officials for FY 2015-16 ([Staff Report #15-136-CC](#))
- D10. Approve minutes for the Council meetings of June 2, June 23 and July 21, 2015 ([Attachment](#))

ACTION: Motion and second (Keith/Ohtaki) to approve Consent Calendar Items D1-D9 passes unanimously.

ACTION: Motion and second (Keith/Ohtaki) to approve Consent Calendar Item D10, the June 2, June 23 and July 21 minutes passes 4-0-1 (Mayor Carlton abstains because she was not present at the July 21st meeting).

A. Study Session

- A1. Provide direction on the El Camino Real Corridor Study ([Staff Report #15-134-CC](#))([Presentation](#))

Transportation Manager Nikki Nagaya made a presentation. Steve Weinberger, W-Trans Project Manager, made a presentation.

Public Comment

- Sharon Delly, Menlo Clockworks, spoke in support of Option Four and preserving parking

- Michael Meyer spoke regarding the need for multi modal transportation
- John Langbein spoke regarding more bike lanes on El Camino Real
- Robert Joseph spoke in support of three through lanes in each direction with dedicated turn lanes
- Matthew Self spoke regarding bike safety and improvements on El Camino Real to increase retail activity

Stella Kaval spoke regarding more bike lanes and bike safety

Ellen Barton, San Mateo County, spoke regarding the Active Transportation Program

Sean Mulcany spoke regarding the need to keep parking

- Andrew Boone spoke regarding safety concerns for bicyclists and pedestrians
- Dale Hall, Menlo Spark, spoke regarding the need for more bike lanes on El Camino to bring more business
- Robert Page spoke in support of protected bike lanes and a grand boulevard
- Bill Kirsch urged Council to establish trial bicycle lanes on El Camino Real
- Bianca Walser stated support for Option Three and spoke regarding bicycle lanes on El Camino Real increasing retail activity
- John Onken spoke regarding parking, emergency services and bicycle infrastructure and stated that the Planning Commission supports Option Two
- Lydia Lee spoke in support of bicycle lanes on El Camino Real
- Chuck Jones spoke regarding east-west bike connectivity and reviewed trip data
- Jon Johnston, Fire Marshall, expressed concern regarding public safety and asked Council to delay action until a circulation analysis can be conducted ([Letter](#))
- Robert Cronin spoke regarding bicycle safety on El Camino Real and buffered bike lanes
- Diane Bailey, Menlo Spark, spoke in support of safe bike lanes on El Camino Real and one year pilot program before taking action
- Steve Schmidt spoke in support of protected bike lanes and safety on El Camino Real
- Adina Levin spoke regarding parking solutions for businesses on El Camino Real
- Emma Shales, Silicon Valley Bike Coalition, spoke in support of protected bike lanes on El Camino Real
- Cindy Welton spoke regarding the need for safety alternatives for bicyclists and pedestrians on El Camino Real
- John Duhig spoke regarding bike route alternatives other than El Camino Real and in support of more car lanes to alleviate traffic
- Jody Brooks spoke regarding making El Camino Real a destination by adding bike lanes
- Henry Riggs spoke regarding induced demand, improved east-west connectivity and increased vibrancy

Council expressed support for the Council subcommittee to continue working with staff to develop a concept plan for the El Camino Real Corridor, which may include a bike land alternative, with a

possible parallel route in the northbound direction between Ravenswood-Menlo Avenues and Glenwood-Valparaiso Avenues. There was also consensus for a trial installation for potentially one year. Additional direction included:

- Outreach to the Menlo Park Fire Protection District regarding emergency access
- Meeting with Caltrans to confirm the permitting process
- Collaborate with neighboring cities
- Outreach to El Camino Real businesses between Live Oak to Ravenswood
- Prepare cost estimates
- Explore alternative sidewalk layout
- Develop metrics for a trial installation
- Summarize bike traffic counts on Alma, Willow Place, and San Mateo

E. Regular Business

- E1. Authorize the City Manager to approve revisions of the Integrated Pest Management (IPM) Policy, enter into a contract not to exceed \$86,000 to provide a one year herbicide-free parks pilot upon approval of the City Attorney, and release a Request for Proposal (RFP) for converting all City maintained parks into herbicide-free zones ([Staff Report #15-132-CC](#))([Presentation](#))

Environmental Programs Manager Heather Abrams introduced the item.

ACTION: Motion and second (Carlton/Cline) to approve revisions to the Integrated Pest Management (IPM) Policy with the modification to add systemic pesticide and use zap traps in place of rat bait poison, enter into a contract not to exceed \$86,000 to provide a one year herbicide-free parks pilot upon approval of the City Attorney, and release a Request for Proposal (RFP) for converting all City maintained parks into herbicide-free zones passes unanimously.

F. City Manager's Report

City Manager McIntyre reported that the City continues to work with the West Bay Sanitary District staff and Sharon Heights Golf Club representatives regarding West Bay's recycled water project

G. Informational Items

- G1. Quarterly review of General Fund operations as of June 30, 2015 ([Staff Report #15-142-CC](#))
- G2. Review of the City's investment portfolio as of June 30, 2015 ([Staff Report #15-131-CC](#))
- G3. Pilot program to waive permit fees for block parties ([Staff Report #15-140-CC](#))

In response to Councilmember Ohtaki, City Attorney McClure stated that in general certificates of insurance are no cost.

H. Councilmember Reports

Councilmember Keith reported that she will be traveling to China from September 19 – 29 with the

non-profit group China Silicon Valley. Mayor Carlton reported on a visit to Menlo Park by Japanese students as part of the cities' friendship agreement. Councilmember Ohtaki reported on information received from the SFO Airport Roundtable that the FAA switching to a new arrival system which is contributing to increased noise.

I. Adjournment

Mayor Carlton adjourned the meeting at 12:15 a.m., August 26, 2015



SPECIAL AND REGULAR MEETING MINUTES - Draft

Date: 10/6/2015
Time: 6:00 p.m.
City Council Chambers
701 Laurel St., Menlo Park, CA 94025

6:00 p.m. Closed Session (City Hall Administration Building, 1st floor conference room)

Mayor Carlton called the Closed Session to order at 6:10 p.m.

Roll Call

Present: Carlton, Cline, Keith, Mueller, Ohtaki

Absent: None

Staff: City Manager Alex McIntyre, City Attorney Bill McClure, Interim Administrative Services Director Nick Pegueros, Interim Finance Director Clay Curtin, Human Resources Director Gina Donnelly, Labor Counsel Charles Sakai

CL1. Closed session pursuant to Government Code Section 54956.8 regarding real property negotiations (1 matter):

Property: Property owned by the City of Menlo Park located at the northeast side of 101/Willow Road Overpass, Menlo Park
City Negotiators: City Attorney Bill McClure, City Manager Alex McIntyre, Assistant Public Works Director Ruben Nino
Negotiating Parties: City of Menlo Park (Owner) and CalTrans, California Department of Transportation (Buyer)
Negotiation: Potential sale of real property owned by the City of Menlo Park at the northeast side of 101/Willow Overpass from Menlo Park to CalTrans, including but not limited to instructions regarding sales price and other terms of sale

CL2. Closed Session pursuant to Government Code Section §54957.6 to conference with labor negotiators regarding labor negotiations with Service Employees International Union (SEIU)

Attendees: City Manager Alex McIntyre, Interim Administrative Services Director Nick Pegueros, City Attorney Bill McClure, Interim Human Resources Director Dave Bertini, Interim Finance Director Clay Curtin, Labor Counsel Charles Sakai

7:00 p.m. Regular Session

Mayor Carlton called the Regular Session to order at 7:03 p.m.

Roll Call

Present: Carlton, Cline, Keith, Mueller, Ohtaki

Absent: None

Staff: City Manager Alex McIntyre, City Attorney Bill McClure, City Clerk Pamela Aguilar

Mayor Carlton led the pledge of allegiance.

Report from Closed Session

There was no reportable action from the Closed Session held earlier this evening.

E. Presentations and Proclamations

- E1. Proclamation announcing National Bullying Prevention Month and National Unity Day on October 21 ([Attachment](#))

Kristin Quintana, Kuk Sool Won of Menlo Park, accepted the proclamation and also received a commendation.

- E2. Presentation by Community Services Staff on Anti Bullying project

Community Services Manager Derek Schweigart made a presentation and distributed informational handouts. ([Handouts](#))

- E3. Proclamation recognizing Menlo Park's Foster Freeze owner Sung Lee ([Attachment](#))

Sung Lee accepted the proclamation.

- E4. Proclamation to join local effort to combat human trafficking ([Attachment](#))

Mike Brosnan, San Mateo County Human Trafficking Project Coordinator, accepted the proclamation.

F. Commissioner Reports

- F1. Library Commission quarterly updates report

Commission Chair Lynn Bramlett was present and introduced Commissioner Kristina Lemons who gave the report ([Report](#))

Public Comment:

- Maya Perkins expressed support for the library and requested more programs at the Belle Haven library
- Wynn Grcich spoke regarding bullying

G. Commission/Committee Vacancies and Appointments

- G1. Consider applicants for appointment to fill one vacancy on the Bicycle Commission and one vacancy on the Finance & Audit Committee ([Staff Report 15-146-CC](#))

City Clerk Pamela Aguilar facilitated the selection process.

Mayor Carlton Soody Tronson for appointment to the Finance and Audit Committee. There being no other nominations, by acclamation, Soody Tronson was appointed to the Finance and Audit Committee to serve the remainder of the vacated term which expires April 30, 2016.

Councilmember Mueller nominated Elizabeth Nash for appointment to the Bicycle Commission. Mayor Carlton supports Cheryl Cathey but also endorses Elizabeth Nash. There being no other nominations, by acclamation, Elizabeth Nash was appointed to the Bicycle Commission to serve the remainder of the vacated term which expires April 30, 2018.

H. Public Comment

- Phil Scott, West Bay Sanitary District, spoke regarding a project that will provide recycled water to the City and the Sharon Heights Country Club and the surrounding area
- Verle Aebi spoke regarding the Alma Street/Ravenswood Avenue traffic signal trial and safety concerns and regarding the 1020 Alma Street project and future grade separation
- Wynn Grcich spoke regarding breast cancer ([Handouts](#))
- Cecilia Taylor spoke regarding the impacts on quality of life resulting from the Hamilton Avenue and Hollyburne Avenue construction project

I. Consent Calendar

Councilmember Mueller pulled Item I1 from the Consent Calendar for further discussion. Councilmember Keith noted that a correction to Item I5, the September 8 Council meeting minutes, was submitted by the City Clerk.

- I1. Approve a partnership and sponsorship policy for Community Services Department events and programs ([Staff Report 15-147-CC](#))
- I2. Authorize the Public Works Director to accept the work performed by Casey Construction, Inc. for the 2013-14 Water Main Replacement Project ([Staff Report 15-144-CC](#))
- I3. Authorize the Public Works Director to accept the work performed by Thermal Mechanical, Inc. for new chillers and variable frequency drives at the Administration Building and Library Project ([Staff Report 15-145-CC](#))
- I4. Adopt **Resolution 6289** accepting dedication of a storm drain line easement from Hibiscus Properties, LLC (Facebook Building 300) and authorize the City Manager to sign agreements and easements required by Conditions of Approval of the Project ([Staff Report 15-148-CC](#))

- I5. Approve minutes for the Council meeting of September 8 and September 21, 2015 ([Attachment](#))

ACTION: Motion and second (Cline/Ohtaki) to approve all items on the Consent Calendar except I1 and with the correction to Item I5 passes unanimously. Councilmember Cline abstained regarding approval of the September 8th Council meeting minutes because he was not present.

There was consensus among Council expressing support of the policy.

Councilmember Mueller requested that this item be continued in order to allow staff to refine the policy to include the following: Definition of Terms section, Approval Authority section and language regarding the restriction on use of the City name and logo.

ACTION: Motion and second (to continue Consent Calendar Item I1 for staff to include modifications to the policy as outlined by Council passes unanimously.

J. Regular Business

- J1. Review of Draft General Plan Land Use and Circulation Elements and Bayfront Area (M-2 Area) Zoning Summary and Reconfirm the Composition of the General Plan Advisory Committee ([Staff Report 15-149-CC](#)) ([Presentation](#))

Assistant Community Development Director and Principal Planner Deanna Chow were present with Charlie Knox of Placeworks who gave a presentation.

Public Comment:

- Jon Johnston, Menlo Park Fire Protection District, spoke regarding emergency response ([Letter](#))
- Ann Draper spoke regarding sea level rise
- Andrew Barnes, on behalf of the Environmental Quality Commission, spoke regarding the EQC's recommendation for the General Plan update
- Harry Bims spoke regarding preservation of the ethnic diversity in the Belle Haven neighborhood and community benefits
- Vicky Robledo spoke regarding the potential name change of the Belle Haven/M2 area, traffic, affordable housing and outreach
- Maya Perkins spoke regarding the potential name change of the Belle Haven/M2 area and the impact of hotels and community amenities
- Keith Ogden, Community Legal Services, spoke regarding increasing rent and affordable housing
- Tamarra DeVaroe inquired regarding the status of community survey results, education equality and job opportunities

- Jeanne Merino, Community Legal Services, expressed concern regarding affordable housing, rent stabilization and eviction controls
- Diane Bailey, Menlo Spark, regarding recommendations for climate action and sustainability goals
- Dale Hall, Menlo Spark, stated support for the circulation element of the plan and spoke regarding parking
- Toni Marie Ali spoke regarding housing, education and job equity and overall balance for the Belle Haven area
- Pershia Washington spoke regarding equity, after school programs and traffic in Belle Haven
- Cecilia Taylor spoke regarding housing and rent stabilization and inquired regarding notification of project status
- Kamal Ali spoke regarding traffic
- Pamela Jones spoke regarding the name of the Bayfront/M2 area and improving outreach to gain community input
- Robert and Felicia McGrew spoke regarding the housing affordability crisis
- Patti Fry spoke regarding potential growth and zoning requirements
- Kadar Bey spoke regarding the need for activities for teens and better education
- Adina Levin spoke regarding complete streets, emergency services and assessment of impact fees
- Jesse Huro spoke regarding traffic, parking and affordable housing
- Skip Hilton spoke regarding support for the plan and encouraging transportation hubs to increase retail activity
- Michelle Tate spoke regarding affordable housing and traffic

ACTION: By acclamation, Council approved the proposed modifications to the composition of the General Plan Advisory Committee.

Council discussed and provided direction to staff to consider and address the following:

- Local employment and other metrics
- Main Street Concept
- Public Benefit/Amenities
- Emergency Services
- Jobs/Housing Balance
- Naming of the M-2 Area

- Intergovernmental/Interagency Coordination
- Sea Level Rise
- Sustainability
- Full Service Hotels
- Housing Affordability

J2. El Camino Real/Downtown Specific Plan – Biennial Review ([Staff Report 15-150-CC](#)) ([Presentation](#))

At this point, City Attorney McClure recused himself and exited the Council chambers due to a conflict of interest that his place of business is in proximity to the subject area of Item J2, the El Camino Real/Downtown Specific Plan.

Associate Planner Jean Lin was present with Principal Planner Thomas Rogers who gave a presentation.

Public Comment:

- John Spanier and Jeff Pollock of Pollock Realty and Pollock Financial & Hornberger & Worstell Inc. made a presentation ([Presentation](#))
- Patti Fry spoke regarding jobs-housing-use balance, retail and funding mechanisms
- Maya Perkins spoke regarding the need for housing
- Adina Levin spoke regarding housing
- Diane Bailey spoke regarding charging for parking downtown
- Bill Sanders spoke regarding downtown parking and supports 2-hour parking

By consensus, Council discussed the hotel project at 1100 El Camino Real and tabled the balance of this item to a future meeting for further discussion. Staff was directed to work with the applicants to review and report back on available FAR.

K. Informational Items

K1. Update on the State of California Model Water Efficient Landscape Ordinance (CA MWELO) ([Staff Report 15-149-CC](#))

L. Adjournment

Mayor Carlton adjourned the meeting at 12:10 a.m. on October 7, 2015 in honor of the victims of the tragedy in Roseburg, Oregon



STAFF REPORT

City Council

Meeting Date:

10/20/2015

Staff Report Number:

15-161-CC

Regular Business:

**Encourage Menlo Park Residents and Businesses
to Avoid Poison Rodent Bait**

Recommendation

The attached resolution is proposed by Mayor Carlton, based on similar resolutions in other Bay Area Cities.

Policy Issues

This resolution is non-binding and encourages Menlo Park residents and businesses to avoid using poison rodent bait, in order to protect non-target species from possible exposure.

Background

On August 25, 2015, the City adopted an updated Integrated Pest Management (IPM) policy, which included a prohibition for the City to use poison rodent bait (Attachment A).

Analysis

The attached resolution encourages residents and businesses to follow the City's IPM policy lead. The Raptors Are The Solution (RATS) non-profit organization has worked with California City leaders to implement similar resolutions. More information can be found at the RATS ordinance webpage www.raptorsarethesolution.org/city-rodenticide-resolutions.

Impact on City Resources

The proposed actions do not require additional resources at this time.

Environmental Review

Environmental review under the California Environmental Quality Act (CEQA) is not required at this time.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

- A. Staff report on Integrated Pest Management policy from August 25, 2015
- B. Resolution

Report prepared by:

Heather Abrams, Environmental Programs Manager



STAFF REPORT

City Council

Meeting Date:

8/25/2015

Staff Report Number:

15-132-CC

Regular Business:

Authorize the City Manager to Approve Revisions of the Integrated Pest Management (IPM) Policy, Enter into a Contract not to Exceed \$86,000 to Provide a One Year Herbicide-free Parks Pilot upon Approval of the City Attorney, and Release a Request for Proposal (RFP) for Converting all City Maintained Parks to Herbicide-free Zones

Recommendation

Staff recommends that the City Council authorize the City Manager to:

1. Approve and sign the revised Integrated Pest Management (IPM) Policy
2. Enter into a contract not to exceed \$86,000 to provide a one year herbicide-free parks pilot upon approval of the City Attorney
3. Direct staff to release a Request for Proposal (RFP) to gather comparable proposals to convert all applicable City maintained parks into herbicide-free zones

After completing the pilot and receiving proposals, staff plans to bring the herbicide-free park maintenance program to City Council for consideration.

Policy Issues

The IPM Policy is intended to reduce pesticide use by providing a decision making framework during maintenance of City parks and property. The City's current IPM Policy, enacted in 1998, must be updated to comply with the Municipal Regional Stormwater Permit (MRP) and the San Mateo County Water Pollution Prevention Program (SMCWPPP).

Community concerns with the use of herbicides, especially RoundUp (main ingredient glyphosate), have been raised in previous City Council and Environmental Quality Commission meetings. Proposed policy revisions were developed to address this concern.

Adoption of the IPM policy is required policy setting, appropriating funds for an herbicide-free park pilot is recommended to field-test this action under the policy, and the proposed RFP will allow staff to fully assess the costs of providing herbicide-free parks throughout the City.

Background

The Environmental Protection Agency, under amendments to the 1987 Clean Water Act, imposed regulations that mandate local government to control and reduce the amount of stormwater pollution runoff into receiving waters of the United States. Under the authority of the Porter-Cologne Water Quality Act, the State Water Resources Control Board has delegated authority to its regional boards to invoke permitting requirements. In July 1991, the San Francisco Bay Regional Water Quality Control Board (Control Board)

notified San Mateo County Water Pollution Prevention Program (SMCWPPP) and all its incorporated cities of the requirement to submit a Municipal Regional Stormwater National Pollutant Discharge Elimination System (NPDES) Permit application and to implement a Stormwater Management Plan.

Provision C9 of the NPDES permit requires the adoption of an Integrated Pest Management (IPM) policy and/or ordinance requiring use of IPM techniques in municipal operations. In 1998, the City of Menlo Park adopted the current IPM Policy (Attachment A) to comply with the NPDES requirements. In 2011, SMCWPPP released a standardized IPM Policy template (Attachment B), which a number of participating agencies adopted. The proposed City IPM Policy (Attachment C) is necessary to facilitate compliance with the NPDES Permit, streamline procedures used by City staff and contractors to document and report compliance, and reduce the application of herbicides near sensitive receptors.

Along with the adoption of the proposed IPM Policy, the Environmental Quality Commission (EQC) and Park and Recreation Commission (PRC) support (1) an herbicide-free pilot project within four City maintained parks in the east, central, and west areas of Menlo Park and (2) the release of a RFP to gather consistent estimates to convert all applicable City maintained parks into herbicide-free zones. Many of the EQC's recommendations have already been incorporated into the proposed IPM policy and staff procedures. Attachment D is the IPM presentation that staff delivered to the EQC in May and the PRC in June.

Analysis

To address community concerns regarding the herbicide RoundUp Pro Max, the EQC recommended City staff conduct an experiment to find alternative methods of weed control. On June 25, 2014, Parks Maintenance staff developed a test site at the Corporation Yard that incorporated perennial grasses and broadleaf weeds. The methods of weed control included mulching, mowing, RoundUp Pro Max (conventional herbicide), Finalsan (Organic labeled herbicide), BurnOut II (Organic labeled herbicide), and a control area. The 6-month trial indicated:

- Each method was successful at removing weeds, but at varying levels
- Mulch/mow method required increased staff time
- RoundUp Pro Max resulted in the longest lasting effect and lowest cost
- Finalsan and BurnOut II required higher rates of application and increased cost per mix rate

Although Finalsan and BurnOut II were labeled organic, the toxicity classification and Personal Protective Equipment (PPE) required for applying these products is greater than RoundUp Pro Max. As a result, the EQC recommended mechanical weed removal and mulching as the preferred approach.

Staff then requested an estimate from Gachina, the City's current landscaping contractor, for an initial weed removal, monthly mechanical weed removal, and mulch maintenance of City maintained parks and center medians. The estimate totaled \$552,964.20 annually, which is more than five times what the City currently pays Gachina for maintenance. For comparison, staff requested an estimate from a separate landscape contractor which was far less. The significant difference in estimates is due to inconsistencies with contractor assumptions due to the informal scope process.

Staff recommends field-testing herbicide-free weed control methods with a pilot program including four (4) parks across the east, west and central areas of Menlo Park. Initiating this pilot program will provide residents an opportunity to use these facilities with the knowledge that no herbicides are used. Following the pilot program, staff recommends releasing an RFP for full implementation, to provide a standard scope and gain comparable estimates to the program cost.

Impact on City Resources

Table 1 summarizes the estimated cost to pilot the four proposed herbicide-free parks.

Table 1: Estimate for pilot herbicide free parks			
Park name	Initial weed removal	Monthly mechanical/mulch maintenance	Cost for one year pilot
Bedwell Bayfront	In staff scope	In staff scope	In staff scope
Fremont	\$2,322.00	\$657.00	\$10,206
Willow Oaks	\$17,012.00	\$2,102.00	\$42,236
Stanford Hills	\$20,532.00	\$1,057.00	\$33,216
Total	\$39,866.00	\$3,816.00	\$85,658

Note: Cost for one-year pilot assumes initial weed removal plus monthly mechanical/mulch maintenance for 12 additional months.

As proposed, the associated IPM plan requires (1) an allocation of \$86,000 to pilot four herbicide-free parks at Willow Oaks Park, Fremont Park, Stanford Hills, and Bedwell Bayfront Park from the City's General Fund Reserve and (2) City staff time to develop and release a RFP for comparable estimates to convert all applicable City maintained parks into herbicide-free zones. Staff will return to the City Council for a future request for appropriation following solicitation of proposals for Citywide implementation.

Environmental Review

The proposed action is exempt from the California Environmental Quality Act (CEQA), according to CEQA Guidelines Section 15308: Actions by Regulatory Agencies for Protection of the Environment.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

- A. 1998 City of Menlo Park IPM Policy
- B. SMCWPPP IPM Policy Template
- C. Draft IPM Policy
- D. IPM presentation given to EQC and PRC

Report prepared by:

Sheena Marie Z. Ignacio, Environmental Services Specialist

Report reviewed by:

Heather Abrams, Environmental Services Manager

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CITY OF MENLO PARK
INTEGRATED PEST MANAGEMENT PLAN

FEBRUARY 1998

FAS97.1-10

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CITY OF MENLO PARK INTEGRATED PEST MANAGEMENT PLAN

INTRODUCTION

The mission of The Division of Maintenance of the City of Menlo Park ("DIVISION") is to provide safe, enjoyable and aesthetically pleasing environments for the residents and visitors of Menlo park. The DIVISION recognizes the importance of dealing with unwanted animals and plants (pests) in those environments following ecologically, esthetically and economically balanced approaches .

Therefore, the DIVISION has decided to address all pest situations in the parks and city properties following the guidelines of Integrated Pest Management or IPM.

INTEGRATED PEST MANAGEMENT POLICY STATEMENT

A. INTEGRATED PEST MANAGEMENT: DEFINITION

The policy of The DIVISION with regards to situations caused by unwanted animals and plants (pests), is to follow the principles of Integrated Pest Management (IPM). The IPM concept to be followed by the DIVISION, is based mostly on one provided by the University of California, State Wide Integrated Pest Management Project (Division of Agriculture and Natural Resources U. C. IPM Publication 12, 1991):

"Integrated Pest Management, is a pest management strategy that focuses on long-term prevention or suppression of pest problems with minimum impact on human health, the environment, and non-target organisms. Preferred pest management techniques include encouraging natural biological control, using alternate plant species or varieties that resist pests, selecting pesticides with a lower toxicity to humans or non-target organisms; adoption of cultivating, pruning, fertilizing, or irrigation practices that reduce pest problems; or changing the habitat to make it incompatible with pest development.

Broad spectrum pesticides are used as a last resort when careful monitoring indicates they are needed according to preestablished guidelines. When treatments are necessary, the least toxic and most target-specific pesticides are chosen.

The IPM definition that we have adopted differs from the IPM definition that appears in the U. C. IPM project publication , mentioned above, in that the definition provided by the U. C. IPM program considers in some instances, the use of broad spectrum pesticides. The IPM policy of the DIVISION does not include the use of broad spectrum pesticides.

Before adopting the above definition of IPM, The DIVISION considered other IPM definitions proposed by several agencies and institutions. Some of the definitions reviewed were:

1. D. R. Bottrell. 1979. Council of Environmental Quality. Integrated Pest Management. Superintendent of Documents. U. S. Government Printing Office. Washington, D. C. 20402.
2. Anonymous. 1993. Pest Control in the School Environment. United States Environmental Protection Agency, Office of Pesticide Programs (H7506C). EPA 735-F-93-012.
3. Olkowski. W. , H. Olkowski and S. Daar. 1992. What is IPM. Bio-Integral Resource Center (BIRC). Berkeley, CA.

B. IPM POLICY EVOLUTION AND UPDATE

The DIVISION, recognizes that the field of pest management is constantly evolving. Therefore, the DIVISION will review the IPM plan every year. This revision will be done to incorporate changes that are needed in light of evolution on pest management concepts and specific situations at Menlo Park. The goal of the DIVISION is to have a pest management plan and policy that reflect the best approaches to pest management.

For example, the DIVISION acknowledges the concept “ Ecologically Based Pest Management (“EBPM”) “ recently proposed by the National Research Council to be used to ecologically deal with pest situations (Anonymous. 1996. Ecologically Based Pest Management. National Research Council. National Academy of Sciences Press. 2101. Constitution Avenue, N. W. Washington D. C. 20418). The EBPM concept is proposed as an improvement of the IPM concept. The DIVISION follows the development and applicability of the EBPM concept and if appropriate, will fully adopt it . The DIVISION has prepared this IPM plan following ecological principles and believes that this IPM plan can be converted into an EBPM if desired.

GOALS AND CITY POLICIES FOR THE INTEGRATED PEST MANAGEMENT PROGRAM

GENERAL GOALS

1. The pest Management program of the City of Menlo Park is based on the IPM principles. Thus, the pest Management program of the City of Menlo Park is primarily based on minimal, or no use, of synthetic chemical pesticides. Emphasis will be given to biological and environmental measures to manage pests. Synthetic chemical pesticides, will not be used when an effective alternative is available.
2. THE DIVISION WILL REVIEW THIS PLAN EVERY YEAR. FOR THE REVIEW, THE DIVISION WILL OBTAIN INPUT FROM AN IPM ADVISORY COMMITTEE THAT WILL BE SET UP BY THE DIVISION.]
3. The DIVISION will train its employees on pest management methods that fit the IPM philosophy. This training will be achieved with in-house or outside resources.
4. The DIVISION will have outreach programs to keep citizens informed about the pest management program followed by the DIVISION and to make the citizens of Menlo Park more aware of the role of organisms in the Menlo Park ecosystem.
5. When it is determined that a pesticide is necessary, the least hazardous pesticide available that will provide an adequate level of control will be used.
6. Only pesticides that are approved and registered with the Environmental Protection Agency and by the State of California will be used.
7. All federal and state laws that pertain to the safe use of pesticides will be adhered to.
8. Pesticides, when used, will be applied following the instructions in their label. This includes instructions on:
 - A. Proper mixing procedures.
 - B. The proper use of the pesticide.
 - C. The proper disposal of empty containers and any unused material.
9. Only category 2, 3, and 4 pesticides will be used. Category 1 pesticides are considered the most toxic; category 4 pesticides are considered the least toxic.

10. Pesticides that are designed by the State of California as Restricted Pesticides will only be used when a non-restricted pesticide will not provide an acceptable level of pest management. Restricted pesticides are pesticides that present a particular hazard, so the State of California requires a special permit to use them.

City employees must only use pesticides approved and provided by the city for pest management operations conducted by the city.

11. Employees will receive training in the proper use of a pesticide before they can use that pesticide. This specific training will be conducted on an annual basis, and will be part of the state mandated annual training on the safe and effective use of pesticides that all employees who use pesticides are required to participate in.
12. For pest management actions that take place in parks, median strips, rights-of-ways, and any other area that is considered an agricultural use by the State of California, a pest Control recommendation will be prepared by a Pest Control Adviser who is licensed by the State of California.
13. Only city employees who have a current Qualified Applicator Certificate will apply pesticides.

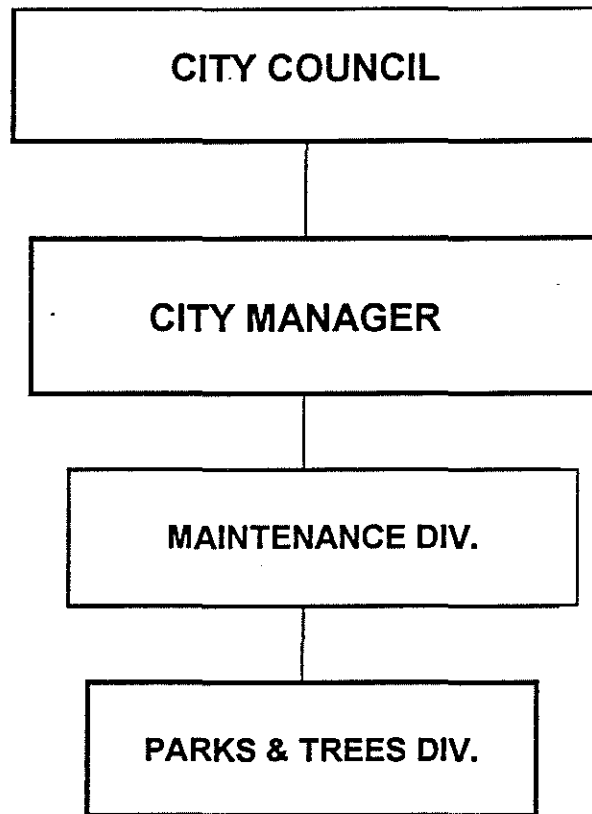
If contractors are used to apply pesticides, they must be licensed by the State of California as Pest Control Operators. State law requires that employee's of these companies be properly trained in the use of pesticides.

OPERATIONAL GOALS:

These goals will be further defined, as specific pest situations are identified and management options defined.

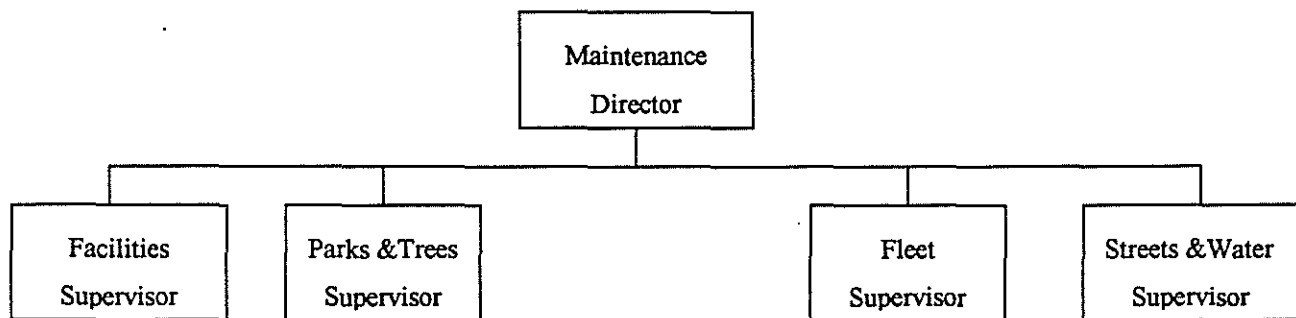
1. To reduce pesticide use, a target reduction of _____% during _____ has been established. The basis for monitoring pesticide usage will be based on active and inert ingredients and adjutants .
2. The DIVISION WILL START developing specific IPM PLANS for various localities in the city based on pest detection.

IMPLEMENTATION STRUCTURE



PERSONNEL RESPONSIBLE FOR THE IMPLEMENTATION OF THE INTEGRATED PEST MANAGEMENT PLAN

By direction of the Maintenance Director the Parks and Trees Supervisor will be responsible for the implementation of the integrated Pest Management Plan.



GUIDELINES TO DEVELOP PEST MANAGEMENT STRATEGIES

SUMMARY: This section provides the general guidelines to develop and implement the IPM plan. Before pest management operations can be conducted against any pest, an "SPECIF IPM PEST MANAGEMENT STRATEGY" must exist for that pest. This strategy will specify:

1. The pest to be controlled, including proper identification
2. The location
3. The host (if applicable), the plant or habitat infested .
4. Action thresholds
5. Approved methods of management.

If an applicable management strategy does not exist one must be developed on a case by case basis.

PROCESS TO DEVELOP SPECIFIC PEST MANAGEMENT STRATEGIES

Each specific pest management strategy will contain:

1. Pest Identification:

The pest should be identified as specifically as is reasonable. Scientific and common names are acceptable, but if scientific names are used common names, accepted by the pest management community, should also be noted to make the strategy as understandable as possible. As an example, identifying the pest as Pacific Flathead Borer is preferable to identifying it as "borer" , and the scientific name (Chrysobothris malis) should be included for completeness.

2. The Location:

The location where the pest was found, should also be identified as specifically as is reasonable. It should either specify a location by name or by type of facility. Some examples would be, Burgess Park, parking lot A .[THERE WILL BE AN EFFORT TO STORE THE LOCATION IN A COMPUTERIZED SYSTEM TO ALLOW QUICK RETRIEVAL AND FOR HISTORICAL ANALYSIS TO ASCERTAIN PATTERN OF PEST OCCURRENCE AND PESTICIDE USE. AS RESOURCES ALLOW IT, INFORMATION WILL BE STORED BASED IN GEOGRAPHIC INFORMATION SYSTEM FORMAT]

3. The Host (if applicable):

The host is the organism from where the pests is obtaining nourishment. An example of a host would be oaks for aphids.

4. Action Thresholds:

An action threshold is an observable condition of the host, or population level, of the pest that must be reached before a pest management measure can be initiated. The action threshold is determined to initiate a pest management measure to keep the pest population below an injury level determined by the DIVISION. This injury level could be based on pest population numbers or host appearance (aesthetic injury level). The injury levels will be very habitat specific depending on many factors.

Thus, an organism, is only a problem if it causes a significant amount of damage or causes certain aesthetic appearance. For example certain number of aphids per shoot or leaf can be tolerated on some plants; however, if the number of aphids reaches a certain level (action threshold) that could indicate that the aphid population is going to reach an injury level (economic or aesthetic injury level), then the aphids might be considered a problem and a management measure may be applied

The action threshold should take into account the pests' natural population fluctuations, the pests' natural enemies, the time needed for the control measure to take effect, the weather, reactions of the public and other variables. To help develop these action thresholds, the DIVISION WILL adopt monitoring procedures to detect action thresholds. The DIVISION will utilize its knowledge of the ecosystem in Menlo Park and scientific resources available outside the DIVISION to adopt monitoring procedures and define action thresholds. One specific source of information will be the State Wide IPM program.

Typical action thresholds include:

- A. Determining a certain number of aphids per shoot of a tree at certain sampling dates.
- B. Determining certain level of honey dew droppings from aphids.
- C. Observing a specified amount of damage from a pest (e.g. 25 % defoliation of a tree).

5. Approved Management Actions:

Management actions will be implemented after a certain action threshold is reached. Therefore action thresholds will be determined for specific management measures. Approved management actions should only include those practices in which the benefits of that action outweigh any potential adverse affects. Adverse affects include the time and cost involved to perform the control action, inconvenience o the public, health and other environmental concerns, etc. If no measure can be found that meets this criteria, then the only approved measure should be "no action" until an acceptable management measure is developed.

It is advisable to have as many management options as possible to minimize or eliminate adverse affects from accumulating and the pest from becoming resistant to any one form of management. It also gives the most number of options to best meet any particular situation. All potential management options should be considered not just chemical ones. Non-chemical control methods include:

A. **Cultural Practices:**

Cultural practices are those, non-pesticide- based, measures, that are taken to alter the environment to be beneficial to the host, plant or habitat infested, and keep the pest from becoming a problem.

Cultural practices in a park include water and fertilizer management, pruning and mulching. A large number of pest problems can be avoided if proper sanitation practices are followed. For example proper waste disposal can reduce yellow jacket nuisance in parks.

B. **Biological and Microbial Measures:**

Biological control involves the use of living agents such as predators parasitoids and microbes to regulate pest populations. For example, egg parasitoids (Trichogramma spp), sometimes are released to manage population of defoliating insects. Another example of biological control is the use of goats to manage vegetation.

C. **Mechanical Control:**

Mechanical control involves physically removing the pests. For example, weed removal using mechanical weeders . Removing aphids using high pressure water spray is another example.

PROCEDURE TO IMPLEMENT A PEST MANAGEMENT MEASURE

1. **Monitoring:**

Monitoring is an integral part of any IPM plan. Since initiation of a pest management operation depends on determining when an action threshold is reached, monitoring of the environment is necessary to observe when it occurs. Monitoring and careful record keeping can also provide valuable data on the effectiveness of pest management actions and pest population fluctuations.

2. **Action Threshold Reached:**

When the selected action threshold is reached for a particular pest, the appropriated management measure can be applied. The measure is applied taking into consideration observations of the pest's environment and health of the host, plant or habitat infested. Modifications of the environment can help to deter pest problems. A healthful plant is less likely to be attacked by an insect than an unhealthy plant. Therefore proper pruning, fertilizing, watering and other cultural practices can help reduce the necessity of pest management measures. Some of these cultural measures can be included as approved methods of pest management.

3. Apply appropriate management measure:

A. **Pest Control Recommendation:**

Before any management measure is applied, it is necessary to determine if, according to State regulations, a Pest Control Recommendation (RECOMMENDATION) is necessary. For example, for management measures that take place in parks, golf courses, median strips, right-of-ways, and any other area that is considered an agricultural use by the State of California a RECOMMENDATION is required. This RECOMMENDATION is written by a Pest Control Advisor who is licensed by the State of California.

Currently, the Maintenance Division is the only department in the City that has a licensed Pest Control Advisor on staff. Therefore, the Maintenance Division will provide these recommendations to other departments as time and resources permit. It is the responsibility of the department requesting the recommendation that their recommendations are up to date, and that all information necessary to complete the recommendation is supplied to the Maintenance Division. It is also the requesting department's responsibility to ensure that all the procedures on the recommendation, on the label, and in applicable State and Federal laws are followed.

B. Public Notification:

To ensure that the public and city staff are aware of what pesticides are being used in their vicinity, the following public notification procedures must be followed by City staff and contractors performing pest control operations for the City.

There are two types of notification that can be required:

- 1 Public notification signs
2. Blue dye in liquid pesticides.

C. BUILDINGS

1. Signs shall be posted at least 24 hours prior to any pesticide application and shall remain posted for at least 24 hours after the application or until the re-entry period has elapsed (whichever is longer).
2. The signs shall:
 - A. be at least 8.5 inches by 11 inches.
 - B. be printed in black or white type on a red background.
 - C. Include the following information:
 - a. The date the pesticide will be applied
 - b. The location(s) within the building that is to be treated
 - c. The problem pest(s)
 - d. The pesticide(s) that is to be used
 - e. The re-entry period that is specified on the pesticide label
 - f. A phone number to call for information concerns.
 - D. Have the Material Safety Data Sheet (MSDS) for the pesticide(s) attached to the sign
 - E. Have the date and time added to the sign when the pesticide is applied.
3. The signs shall be posted at all entrances to the building

This page could be replaced by a sample(s) of the sign(s) that are approved and used when pesticide applications are made.

PARKS AND OTHER LANDSCAPED AREAS

When pest management operations will be conducted in a park, vacant lot, public path, or in the landscaped area surrounding City owned building, public notification signs will be posted as described below:

1. Signs shall be posted before the pesticide application is started, and shall remain posted for at least 24 hours after the application or until the re-entry.
2. The signs shall:
 - A. be at least 8.5 inches by 11 inches.
 - B. be printed in black or white type on a red background.
 - C. include the following information:
 - a. The date the pesticide will be applied.
 - b. Either i or ii:
 - i. The location(s) within the park that is to be treated.
 - ii. A notification that blue dye is in the pesticide to indicate there it has been applied
 - c. The problem pest(s)
 - d. The be pesticide(s) that is to be used
 - e. The re-entry period that is specified on the pesticide label
 - f. A phone number to call for information concerns.
3. The signs shall be posted adjacent to all sidewalks and paths that enter the park, and at any other location where people would normally enter the park. If only a portion of a park is being treated, only that portion of the park needs to be posted.

There are sample signs on the following pages. The first if for situations where blue dye is not used and the second is for situations where blue dye is used. They can be copied onto red paper, properly filled out, and used as a public notification sign.

[SAMPLE SIGNS HERE]

Median strips and Roadsides

When pest management measures will be conducted on median strips or roadsides, public notification signs will be posted as described below.

Signs are not required in most situations unless the pesticide label specifies that posting is required. However blue dye should be mixed with all liquid pesticides to indicate what areas have been sprayed.

If a walkway enters the area being treated, signs shall be posted as for parks.

APPLICATION

For Information Call

858-3490

3. **Dye Markers:**

All outdoor liquid pesticide applications will use a blue dye marker to indicate exactly where pesticide materials have been applied. [THE EXCEPTIONS TO THIS REQUIREMENT WOULD BE ON PLANT MATERIAL WHERE BLUE DYE WOULD SIGNIFICANTLY DETRACT FROM THE AESTHETICS OF THE PLANT MATERIAL.]

C. **Pesticide Purchasing:**

All purchasing of pesticides must be done with the approval of the applicable department's designated Officer. No other person should be authorized to approve the purchase of any pesticide. Employees are not to bring pesticides from home for use on city property. This includes pesticides that are packaged for home use.

D. **Pesticide and Pesticide Container Disposal:**

- a. Unused pesticides and empty pesticide containers will only be disposed of at disposal sites approved by the Director of Maintenance or his / her designee.
- b. All empty containers that previously contained concentrated liquid pesticides are to be triple rinsed before disposal. The rinse water is to be added to the spray tank as part of the water used to dilute the pesticide.
- c. All disposal procedures on the pesticide label and those required by law will be adhered to.

E. **Record Keeping:**

Records of all pesticide applications done by the DIVISION and contractors will be kept and stored at Maintenance Division. The records are to include:

- a. the date and time of the application
- b. the brand name of the pesticide
- c. the technical name of the pesticide
- d. Target organism (scientific and common name)
- e. Where the pesticide was purchased
- f. the amount of pesticide used
- g. the concentration of the pesticide used
- h. the name of the applicator or contractor
- i. the equipment used to apply the pesticide
- j. where the pesticide was applied
- k. when applicable, the size of the area treated

These records are to be entered and kept in a format that allows its storage and processing using computerized data bases. A form designed for this purposed will be designed by the DIVISION sent to the County Office of Environmental Health by the end of the month following the application?

By State law, records of this same information are required to be kept [on file?]for two years and a monthly summary is required to be sent to the County Agricultural Commissioner's Office / Environmental Health.

F. Evaluation:

As part of the regular monitoring program, the effectiveness of the treatment should be evaluated to help make future treatments more effective.

Training and Certification:

1. Pesticide Application:

All employees who apply pesticides will be required to receive annual training on the proper use of pesticides, and will receive specific training on the proper use of each type of pesticide they will use. An employee will not apply pesticides unless he or she has received this training.

Only City employees who have a current Qualified Pesticide Applicator Certificate will apply pesticides. The only exception to this will be the use of Roundup in 3 gallon tanks. Roundup when mixed and applied from 3 gallon tanks may be applied by city employees who have received annual training in its proper use.

To obtain a Qualified Pesticide Applicator Certificate, one has to pass a series of tests given by the State of California. Qualified Pesticide Applicator Certificate holders also have to complete 40 hours of additional training every 2 years.

If contractors are used to apply pesticides, they must be licensed by the State of California as Pest Control Operators. State law requires that employees of these companies be properly trained in each pesticide that they are to mix or apply.

2. **Pest Control Advisors:**

For control measures that take place in parks, golf courses, median strips, right-of-ways, and any other area that is considered an agricultural use by the State of California, a Pest Control Recommendation is required. This recommendation is written by a Pest Control Advisor who is licensed by the State of California. To be eligible for this license, one has to meet stringent educational requirements and pass a series of tests given by the State of California. To maintain this license, a Pest Control Advisor has to complete 40 hours of training every 2 years.

Public Outreach

As materials and resources become available, an effort will be made to provide the Citizens of Menlo Park with material to inform them about the IPM program of the DIVISION and with information to assist them to decide when to use pesticides, how to properly use pesticides if they are to be used, and how to understand the information on pesticide labels. This material will also include information on alternatives to pesticides and other pest control methods.

Use Reports

1. **Monthly Reports:**

The DIVISION will prepare a monthly report of all pesticides used by their respective departments and contractors. The report will list for each application:

- a. Date and time of the application
- b. Brand name of the pesticide
- c. Technical name of the pesticide
- d. Target organism (scientific and common name)
- e. Where the pesticide was purchased
- f. The amount of pesticide used
- g. Concentration of the pesticide used
- h. Name of the applicator or contractor
- i. Equipment used to apply the pesticide
- j. Where the pesticide was applied
- k. When applicable, the size of the area treated

This report is to be sent to [Director of Maintenance].

By State law, records of this same information are required to be kept on file for two years and a monthly summary is required to be sent to the County Agricultural Commissioner's Office for applications

2. **Yearly Reports:**

The DIVISION will use the monthly reports to prepare a report for the City Manager. This report will include:

- A. Detailed pesticide usage data. See page 23
- B. The reduction in pesticide use and how well the target of a specific pesticide use was reached.
- C. Discussions of methods being used to reduce pesticide usage by City departments
- D. An update of the IPM Plan.

This report will also be presented to the County Agricultural Commissioner's Office and the Environmental Beautification Commission for its comment and review.

City of Menlo Park
Fire Hydrants & Services
Integrated Pest Management Plan
February 1998

Persons Authorized to Perform Pest Control Activities

Only employees who have a current Qualified Pesticide Applicator Certificate will apply pesticides. City employees are not to bring pesticides from home for use on city property. This includes pesticides that are packaged.

Weeds Around Fire Hydrants in undeveloped areas of Menlo Park:

Location/Host	Action Threshold	Action
The area surrounding a fire hydrant that is: 1. 3' from the fire hydrant 2. Between the fire hydrant and the street	50% of the area covered with weeds that are 1' or more in height	Spray the area with Roundup in accordance with the current Pest Control Recommendations or mechanically remove the weeds

In the hills of Menlo Park the area around fire hydrants needs to be kept relatively free of weeds. Weeds in this area can become large enough to obscure the hydrant from view, which makes it difficult to find and use when it is needed for fire control. Fire hydrants need to be visible from the street so fire crews can easily find them. The area around the fire hydrant also needs to be kept clear for proper operation of the hydrant. Weeds are primarily a problem in the hills area.

The areas around fire hydrants are not currently mulched. Hydrants that could benefit from mulch around them need to be identified and mulched as time and resources permit. Mulching helps to keep weed seeds from germinating, thus reducing the need for pesticide applications.

**INTEGRATED PEST MANAGEMENT
PLAN
FOR BUILDINGS**

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PERSONS AUTHORIZED TO PERFORM PEST CONTROL ACTIVITIES:

The City uses contractors to apply pesticides for the control of pests in buildings. The contractors must be licensed by the State of California as Pest Control Operators. State law requires that employees of these companies be properly trained in each pesticide that they are to mix or apply.

City employees are not to bring pesticides from home for use on city property. This includes pesticides that are packaged for home use.

GENERAL PRINCIPLES:

Buildings are not a natural habitat for pests, but they can provide attractive places for pests to live.

Buildings can be made less attractive with proper sanitation and building maintenance.

1. Exclusion:

Crack and crevices that pests can enter should be caulked or repaired. Window screens should be kept in good condition to keep out flying insects. These insects can be pests themselves, but they also provide food for spiders.

Pests can be unknowingly be brought into buildings by people. Potted plants, cut flowers, and other [such] material should be inspected for insects or spiders.

2. Sanitation:

Food should be properly stored and disposed of. Spills should be promptly cleaned up to prevent them from becoming food for pests. The areas around stoves, sinks, refrigerators and other areas used for food preparation or consumption need to be kept clean. Garbage containers that are used to dispose of empty food containers or uneaten food need to be emptied frequently and provided with tight fitting lids. The area around dumpsters should be kept clean and the lids should be kept closed.

ARACHNIDS

Black Widow Spiders

Location/Host	Action Threshold	Action
Inside buildings	Whenever black widow spider are identified	Apply an acaricide to the spider or its web.

It is unlikely that black widow spiders will be encountered. They are only found in dark locations. If a black widow is found, it is acceptable to use an acaricide. To be effective the acaricide must be applied directly to the spider or its web.

Other Spiders

Location/Host	Action Threshold	Action
Inside buildings	Whenever spiders or webs are observed	Vacuum the spider and its web

Most spiders are harmless to people and are often beneficial, but they need to be controlled because their webs can be a nuisance and many people have an aversion to spiders. Pesticides are not usually necessary to control spiders. In most situations mechanical removal and proper sanitation and building maintenance will keep them under control.

INSECTS

Argentine Ants

Location/Host	Action Threshold	Action
Food Preparation and Storage areas	Whenever ants are observed	Wipe up ants with soapy water and/or use insecticide bait.
	A definable trail is observed	Treat building's foundation, surrounding sidewalk cracks, and crawl space with an insecticide. If possible, only treat near food preparation areas.
Other Areas	A definable trail is observed.	Wipe up ants with soapy water and/or use insecticide bait.
	More than one definable trail is observed	Treat foundation, sidewalk cracks, and crawl space under building with an insecticide. If possible, treat only areas near the ant trails.

Insecticides used indoors do not provide long term control. Insecticide bait is taken to the nest, where it can be more effective. Soapy water can be used to get rid of ants that are an immediate problem.

Insecticides can be used outside of the building to provide a barrier to ant invasions. The foundation, cracks in pavement surrounding buildings, and the crawl space that is under some buildings are areas where an insecticide can help control ants. If ants are only a problem in a portion of a building, it may be possible to treat only the part of the building that is near the problem area.

Cockroaches

Location/Host	Action Threshold	Action
Food preparation and Storage Areas	2 Cockroaches in any sticky trap	Use insecticide bait or treat with an insecticide
Other Areas	5 Cockroaches in any sticky trap	Use insecticide bait or treat with insecticide

To determine when control of cockroaches is warranted, a system of monitoring is necessary. In areas where cockroaches are a known or suspected problem, sticky traps need to be put out to evaluate the problem. After 24-48 hours, if the number of cockroaches in any trap reaches the action threshold, either the use of insecticide bait or treatment of the area with an insecticide is warranted.

Fleas

Location/Host	Action Threshold	Action
Carpeted Floors	When Fleas are found	Vacuum the area weekly or more frequently
	2 weeks after initially spotting fleas, and carpet has been vacuumed at least 3 times	Apply insecticide

Vacuuming is effective in controlling adult fleas, but larvae are resistant to being picked up by the vacuum. Therefore, vacuuming must be repeated frequently. Fleas can survive in the vacuum bag, so the vacuum bag should be disposed of in a sealed plastic bag.

Termites

Location/Host	Action Threshold	Action
Wooden parts of buildings	When evidence of termite activity is observed	Replace damaged wood and treat with an insecticide

Rats and Mice VERTEBRATES

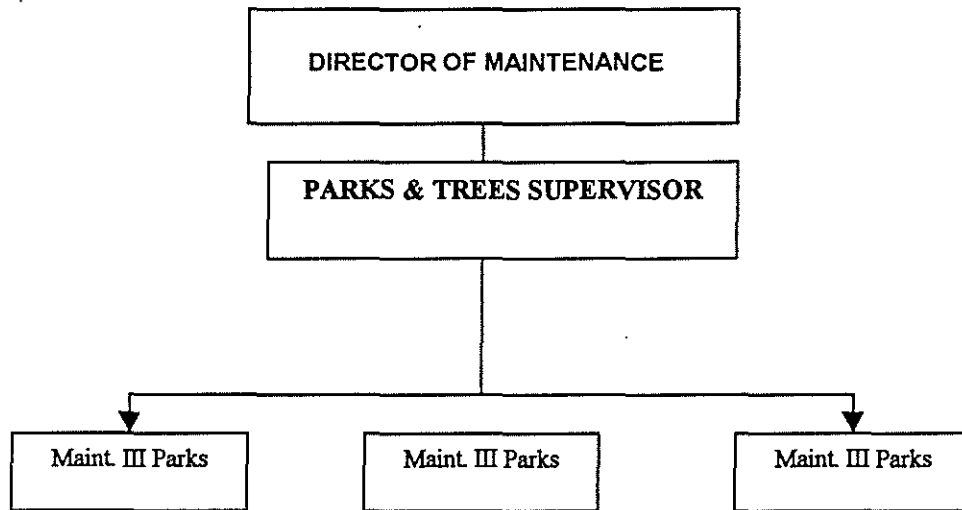
Location/Host	Action Threshold	Action
Inside buildings	Whenever evidence of rats or mice is observed	Put out bait stations in the affected areas

**INTEGRATED PEST
MANAGEMENT PLAN FOR
PARKS, MEDIAN STRIPS
AND OTHER
OUTDOOR FACILITIES**

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IMPLEMENTATION STRUCTURE



PERSONS AUTHORIZED TO PERFORM PEST CONTROL ACTIVITIES

Only City Employees who have a current Qualified Pesticide Applicator Certificate will apply pesticides. The only exception to this will be the use of Roundup in 3 gallon tanks. Roundup when mixed and applied from 3 gallon tanks may be applied by city employees who have received annual training in its proper use.

City employees are not to bring pesticides from home for use on city property. This includes pesticides that are packaged for home use.

For pest control measures that take place in parks, golf courses, median strips, right-of-ways and any other area that is considered an agricultural use by the State of California, a Pest Control Recommendation is required. If this Recommendation is not in effect for the planned method of control, a new Recommendation must be acquired from the Parks and Trees Supervisor in charge of Integrated Pest Management.

Broadleaf Weeds in Turf

Location/Host	Action Threshold	Action
Athletic Fields	Weeds cover 10% of the green	Spray the field with a selective herbicide in accordance with the current Pest Control Recommendation
Newly Established Turf	Weeds cover 7% of the green	Spray the turf with a selective herbicide in accordance with the current Pest Control Recommendation
Other Turf	Weeds cover 25% of the green	Spray the turf with a selective herbicide in accordance with the current Pest Control Recommendation

Weeds in Mulched Bare Areas

Location/Host	Action Threshold	Action
Median strips and other areas kept bare of vegetation	Mulch is less than 4 ' thick	Replenish mulch to 6" or greater depth
	Weeds cover 5% of the surface of the ground	Spray the weeds with Roundup in accordance with the current Pest Control Recommendation, or mechanically remove weeds.

Weeds in median strips and other areas that are devoid of desirable vegetation need to be kept relatively free of weeds. Weeds contribute to the impression that the area is unkempt which is not in accordance with the city's policy of maintaining a clean and aesthetically pleasing city.

Weeds in Unmulched Bare Areas

Location/Host	Action Threshold	Action
Median strips and other areas kept bare of vegetation	Fall and Spring: Weeds cover 1% of the surface of the ground	Spray the area with a preemergent herbicide in accordance with the current Pest Control Recommendation
	Weeds cover 5% of the surface of the ground	Spray the weeds with Roundup in accordance with the current Pest Control Recommendation, or mechanically remove weeds.

Weeds in median strips and other areas that are devoid of desirable vegetation need to be kept relatively free of weeds. Weeds contribute to the impression that the area is unkempt which is not in accordance with the city's policy of maintaining a clean and aesthetically pleasing city.

There are some areas that are not currently mulched but could be. These areas should be mulched as time and resources permit. Mulching helps to keep weed seeds from germinating, thus reducing the need for pesticides.

Turf Edges

Location/Host	Action Threshold	Action
Turf edges		
Edges that can be edged with a mechanical edger	Grass is growing from [out beyond?] edge by 1"	Use a mechanical edger to maintain the edge
Edges that cannot be edged with a mechanical edger.	Grass is growing out from edge by 3"	Spray the encroaching grass with Roundup in accordance with the current Pest Control Recommendation or remove by mechanical means

Turf edges that are overgrown are unsightly and can interfere with the activities of the adjoining area. Encroaching grass can decrease the width of a path, make valve covers and other access covers hard to open, or can hide them altogether.

Weeds Around Sprinkler Heads

Location/Host	Action Threshold	Action
3" band around irrigation heads	Weeds (including grass) growing beyond edge at least 1" or interfering with the sprinkler.	Spray the 3" band with Roundup in accordance with the current Pest Control Recommendation, or remove by mechanical means

Weeds (including grass) are a constant problem around sprinkler heads. They interfere with the proper operation of the heads by not allowing the heads to pop up, the operating mechanism is stopped from moving, or the stream of water is obstructed. This results in the inadequate watering of the turf.

To combat this problem a 2" -3" band around sprinkler heads s kept free of weeds and encroaching grass.

Weeds in Paths and Roads

Location/Host	Action Threshold	Action
Cracks in paved paths and roads (asphalt or concrete)	Weeds cover 5% of the surface area	Spot spray with Roundup in accordance with the current Pest Control Recommendation, or remove by mechanical means
	Weeds are observed and Roundup is being used in adjacent areas.	Spot spray with Roundup in accordance with the current Pest Control Recommendation,
Unpaved paths ((e.g. crushed rock)	Weeds cover 5% of the surface area	Spot spray with Roundup in accordance with the current Pest Control Recommendation, or remove by mechanical means

ARACHNIDS

Mites

Location/Host	Action Threshold	Action
Parks	Spring and early summer:	Spray in accordance with the current Pest Control Recommendation

INSECTS

Hornets and Wasps

Location/Host	Action Threshold	Action
All areas maintained by the Parks Division	Whenever a nest is observed within 10' of the ground	Destroy the nest by mechanical means or with a pesticide in accordance with the current Pest Control Recommendation
	Whenever a nest is observed on a building	Destroy the nest by mechanical means or with a pesticide in accordance with the current Pest Control Recommendation

Bees

Location/Host	Action Threshold	Action
All areas maintained by the Horticulture Section	Whenever a hive is observed within 10' of the ground	Contact one of the beekeepers on file and have them remove the hive.
	Whenever a hive is observed on a building	Contact one of the beekeepers on file and have them remove the hive.

Even though bees are beneficial in the pollination of flowers, they must be controlled due to the hazard they present. Their sting is quite painful to most people and can be life-threatening to others. Since these are colonial insects, they are concentrated in their nests. This makes the nest both the focal point of the hazard and the ideal point of control. Nests that are within 10' of the ground or on a building pose the greatest hazard to the public. There are local beekeepers who will remove hives for a fee. Use of this service allows us to control this pest without the use of pesticides.

Sucking Insects

Location/Host	Action Threshold	Action
Parks	25% of foliage with symptoms from sucking insects or mites	Use a pesticide in accordance with the current Pest Control Recommendation

VERTEBRATES

Gophers and Ground Squirrels

Location/Host	Action Threshold	Action
Trafficked areas and areas that surround them (e.g. athletic fields and lawns)	1 hole in an area of any size	Use poison bait or traps in accordance with the current Pest Control Recommendation

The holes created by gophers and ground squirrels create an extreme tripping hazard to park users in trafficked areas. For this reason, Park Services has a zero tolerance level for these pests in areas that the public will be walking or playing on. This same threshold is used for the surrounding area because these pests are very mobile and would soon be in the trafficked areas.

RATS AND MICE

Location	Action Threshold	Action
All outdoor areas maintained by the Office of Parks and Recreation	Whenever a rat or mouse is observed	Use poison bait or traps in accordance with the current Pest Control Recommendation

PERSONS AUTHORIZED TO PERFORM PEST CONTROL ACTIVITIES

Only employees who have a current Qualified Pesticide Applicator Certificate will apply pesticides. City employees are not to bring pesticides from home for use on city property. This includes pesticides that are packaged for home use.

SHARON PARK LAKE AND BURGESS LAKE

<u>LOCATION/HOST</u>	<u>ACTION THRESHOLD</u>	<u>ACTION</u>
Shallow water shelf around Lakes	When algae has grown to the extent that it is ready to mat up	Treat the algae with an algaecide and/or mechanically remove the algae

The shallow water around the edge promotes the growth of algae. When the algae decomposes it creates an obnoxious smell and an eyesore that greatly detracts from the beauty of the lake. To combat this problem, the amount of algae in the lake needs to be kept down to a level where it will not produce an undesirable smell.

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San Mateo Countywide Water Pollution Prevention Program Model Integrated Pest Management (IPM) Policy Template

GOAL

The [City/County of ____] seeks to protect the health and safety of its employees and the general public, the environment and water quality, as well as to provide sustainable solutions for pest control through the reduced use of pesticides on property including buildings owned or managed by the City/County by applying Integrated Pesticide Management principles and techniques. The municipal regional stormwater permit requires that the [City/County of ____] minimize reliance on pesticides that threaten water quality.

REQUIRED USE OF INTEGRATED PEST MANAGEMENT

Employees implementing pest management controls will use Integrated Pest Management (IPM) techniques that emphasize non-pesticide alternatives. Pesticides will only be used after careful consideration of non-chemical alternatives and then the least toxic chemicals that are effective shall be used. Pest control contractors hired by the [City/County] are required to implement IPM to control pests. This will be achieved by hiring only IPM-certified pest control contractors or by including contract specifications requiring contractors to implement IPM methods.

The [City/County] will establish written standard operating procedures for pesticide use to ensure implementation of this IPM policy and to require municipal employees and pest control contractors to comply with the standard operating procedures.

The [City/County] will track employee and contractor pesticide use and prepare an annual report summarizing pesticide use and evaluating pest control activities performed consistent with the municipal regional stormwater permit's requirements.

The [City/County] will review its purchasing procedures, contracts or service agreements with pest control contractors and employee training practices to determine what changes, if any, need to be made to support the implementation of this IPM Policy.

The [City/County] will perform educational outreach and/or support Countywide or regional efforts to educate residential and commercial pesticide users on a) goals and techniques of IPM, and b) pesticide related water quality issues consistent with the municipal regional stormwater permit's requirements.

The IPM-based hierarchical decision making process that will be used to control pests will include the following:

1. Based on field observations evaluate locations and sites where pest problems commonly occur to determine pest population, size, occurrence, and natural enemy population, if present. Identify conditions that contribute to the development of pest populations, and decisions and practices that could be employed to manage pest populations

2. Design, construct, and maintain landscapes and buildings to reduce and eliminate pest habitats;
3. Modify management practices including watering, mulching, waste management, and food storage to discourage the development of pest population;
4. Modify pest ecosystems to reduce food, water sources, and harborage;
5. Prioritize the use of physical controls such as mowing weeds, using traps, and installing barriers;
6. Use biological controls to introduce or enhance a pests' natural enemies;
7. When pest populations reach treatment thresholds (based on how much biological, aesthetic, economic or other damage is tolerable) non-pesticide management activities will be evaluated before considering the use of pesticides;
8. When pesticides are necessary, select reduced risk pesticides and use the minimum amounts needed to be effective;
9. Apply pesticides at the most effective treatment time, based on pest biology, monitoring, and other variables, such as weather, seasonal changes in wildlife use, and local conditions; and
10. Whenever possible, use pesticide application methods, such as containerized baits, that minimize opportunities for mobilization of the pesticide in stormwater runoff.

Departments performing pest management activities will identify an IPM coordinator who is responsible for assisting staff with implementation of this IPM policy.

BACKGROUND

Pesticides are defined as: any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, rodents and other animals, unwanted plants (weeds), bacteria or fungi. The term pesticide applies to herbicides, fungicides, insecticides, rodenticides, molluscicides and other substances used to control pests.

Integrated Pest Management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment.

IPM techniques could include biological controls (e.g., ladybugs and other natural enemies or predators); physical or mechanical controls (e.g., hand labor or mowing, caulking entry points to buildings); cultural controls (e.g., mulching, alternative plant type selection, and enhanced cleaning and containment of food sources in buildings); and reduced risk chemical controls (e.g., soaps or oils).

[City/County] owned or managed property/facility includes but is not limited to parks and open space, golf courses, roadsides, landscaped medians, flood control channels and other outdoor areas, as well as municipal buildings and structures.

City of Menlo Park City Manager Policy		
Department City Manager Subject DRAFT INTEGRATED PEST MANAGEMENT POLICY	Page 1 of 4	Effective Date
	Approved by	Procedure #
	Department Head	
	City Manager	

GOAL

The City of Menlo Park seeks to protect the health and safety of its employees and the general public, the environment and water quality, as well as to provide sustainable solutions for pest control through the reduced use of pesticides on City property by applying Integrated Pesticide Management principles and techniques. The municipal regional stormwater permit requires that the City of Menlo Park minimize reliance on pesticides that may threaten water quality.

City of Menlo Park owned or managed property/facilities may include but is not limited to: parks and open space, golf courses, roadsides, landscaped medians, flood control channels and other outdoor areas, as well as municipal buildings and structures.

BACKGROUND

Integrated Pest Management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of pest-resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment. (Source: University of California State-wide Integrated Pest Management Project)

City of Menlo Park employees implementing pest management controls will use Integrated Pest Management (IPM) techniques that emphasize non-pesticide alternatives. The City of Menlo Park hereby establishes written standard operating procedures as described in this policy for pesticide use to ensure implementation of IPM and to require municipal employees and pest control contractors to comply with the standard operating procedures.

TRAINING AND OUTREACH

City personnel who apply pesticides or supervise and provide advice about pesticide application will be trained as mandated by State and Federal regulations on recommended IPM strategies and techniques, as well as pollution prevention practices. City contractors will also be required to complete training regarding the concepts that are included in this Policy.

The City of Menlo Park will perform educational outreach and/or support Countywide or regional efforts to educate the community on a) goals and techniques of IPM, and b) pesticide related water quality issues consistent with the municipal regional stormwater permit's requirements.

THE IPM-BASED HIERARCHICAL DECISION MAKING PROCESS

The City, in carrying out its operations, shall assume pesticides are potentially hazardous to human and environmental health. City departments shall give preference to reasonably available nonpesticide alternatives when considering the use of pesticides on City property. For all pest problems on City property, City staff and City contractors shall follow the IPM approach outlined below, only proceeding to the next step if prior steps have been exhausted.

- 1) Based on field observations, evaluate locations and sites where pest problems commonly occur to determine pest population, size, occurrence, and natural enemy population, if present. Identify conditions that contribute to the development of pest populations, and decisions and practices that could be employed to manage pest populations;
- 2) Design, construct, and maintain landscapes and buildings to reduce and eliminate pest habitats;
- 3) Modify management practices, including watering, mulching, waste management, and food storage, to discourage the development of pest population;
- 4) Modify pest ecosystems to reduce food, water sources, and harborage;
- 5) Prioritize the use of physical controls such as mowing weeds, using traps, and installing barriers;
- 6) Use biological controls to introduce or enhance a pests' natural enemies;
- 7) When pest populations reach treatment thresholds (based on how much biological, aesthetic, economic or other damage is tolerable) non-pesticide management activities will be evaluated before considering the use of pesticides;
- 8) When pesticides are necessary, select reduced-risk pesticides and use only the minimum amounts needed to be effective;
- 9) Whenever possible, use pesticide application methods, such as containerized baits, that minimize opportunities for mobilization of the pesticide in stormwater runoff; and
- 10) Apply pesticides at the most effective treatment time of day and seasons, based on pest biology, monitoring, and other variables, such as weather, seasonal changes in wildlife use, and local conditions.

PESTICIDE USE AND TRACKING

Pesticides will only be used after careful consideration of non-chemical alternatives, and then the least toxic chemicals that are effective shall be used. Pest control contractors hired by the City of Menlo Park are required to implement IPM to control pests. This will be achieved by hiring only IPM-certified pest control contractors or by including contract specifications requiring contractors implement IPM methods.

Appropriate City departments will continue to track pesticide use for reporting purposes. City contractors will also be required to track pesticide use and report that data to the City annually. All City contractors must notify City staff, in writing, at least 24 hours in advance of any pesticide use. City-wide pesticide use data will be reported annually to the Regional Water Quality Control Board, as required in the City's NPDES Storm Water Discharge Permit. The annual report, including the pesticide use data, will be public record.

NOTICE OF PESTICIDE USE

City of Menlo Park employees and City contractors that apply any pesticide shall comply with the following notification procedures:

- 1) Notification signs shall be posted at least 24 hours before application of any pesticide product and remain posted at least 24 hours after application of pesticide unless otherwise stated on pesticide product label.
- 2) Signs shall be posted at every entry point to the area where the pesticide is applied if the pesticide is applied in an enclosed area, and in highly visible locations around the perimeter of the area where the pesticide is applied if the pesticide is applied in an open area.
- 3) Signs shall contain the name and active ingredient of the pesticide product, the target pest, the date of pesticide use, the signal word indicating the toxicity category of the pesticide product, the date for re-entry, and the name and contact number of the City department responsible for the application.
- 4) Notifications signs shall not be required to post signs in right-of-way locations that the general public does not use for recreation purposes.

Notification requirements may be waived by the Public Works Director or designee in cases of emergency situations where pest outbreak poses an immediate threat to public health or significant economic loss.

For more information please contact:

City of Menlo Park
701 Laurel Street
Menlo Park, CA 94025
Phone: (650) 330-6780

USE OF TOXICITY CATEGORY IV PESTICIDE PRODUCTS

City of Menlo Park employees and City contractors will use the least toxic chemical pesticides that is effective. Those classified as Toxicity Category IV by the United States Environmental Protection Agency shall be applied only after the careful consideration of non-chemical alternatives. Currently Category IV pesticides are not required to include a signal word on the label.

LIMITED USE OF TOXICITY CATEGORY III OR II PESTICIDE PRODUCTS:

City of Menlo Park employees and City contractors will be limited in their use of chemical pesticides that are classified as Toxicity Category III or II by the United States Environmental Protection Agency. Category III or II pesticides will only be used in situations where a Pest Control Advisor recommends the use of these pesticides after Category IV alternatives have been exhausted or where needed to prevent a pest outbreak that poses an immediate threat to public health or significant economic loss. Toxicity Category III pesticides include the signal word “CAUTION” on the product label. Toxicity Category II pesticides include the signal word “WARNING” on the product label.

BAN ON USE OF TOXICITY CATEGORY I PESTICIDE PRODUCTS

City of Menlo Park employees and City contractors are prohibited from using chemical pesticides that are classified as Toxicity Category I by the United States Environmental Protection Agency. Exemptions to this ban may be granted in emergency cases where a pest outbreak poses an immediate threat to public health or significant economic loss will result if the banned pesticide is not applied. Exemptions will only be granted in situations where a Pest Control Advisor recommends the use of such a pesticide, and the Category I pesticide application is approved by the Public Works Director or designee. Toxicity Category I pesticides include the signal word “DANGER” on the product label.

ANNUAL POLICY EVALUATION

The Public Works Superintendent shall maintain all records and provide an annual report to the Public Works Director. Such reports shall also be provided to the City Council as requested. The annual report shall include a review and summary of the City’s pesticide use, cultural practices and non-chemical pest control activities, exemptions granted, training offered, any proposed modifications to the City’s pesticide list and any suggestions for amendments or resources needed for effective implementation of the IPM policy.

DEFINITIONS

Whenever used in this Policy, the following terms shall have the meanings set forth below:

1. ‘Contractor’ means a person, firm, corporation or other entity, including a governmental entity, that enters into a contract with the City to provide landscape maintenance or related activities.
2. ‘Integrated Pest Management’ means a decision-making process for managing pests that uses monitoring to determine pest injury levels and combines biological, cultural, physical and chemical tools to minimize health, environmental and financial risk. The method uses knowledge of the target pests’ life cycles, environmental requirements and natural enemies to facilitate natural control of the pest. The method incorporates natural methods of pest control, then proceeds to the least-toxic pesticides if the natural methods are not effective.
3. ‘NPDES Permit’ is a regulatory document issued by the State of California to control the discharge of pollutants into waterways. NPDES is an acronym for National Pollutant Discharge Elimination System.
4. ‘Pest Control Advisor’ means someone who is licensed by the California Department of Pesticide Regulations in accordance with California Code of Regulations, Title 3, Article 5. Only a licensed Pest Control Advisor who is

registered with the County Agriculture Commissioner may provide written pest control recommendations for area such as parks, golf courses and public right-of-ways.

5. 'Pesticide' means pesticide as defined in Section 12753 of the California Food and Agriculture Code, including, but not limited to, herbicides, insecticides, and fungicides. Pesticides are defined as: any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest. Pests can be insects, rodents and other animals, unwanted plants (weeds), bacteria or fungi. The term pesticide applies to herbicides, fungicides, insecticides, rodenticides, molluscicides and other substances used to control pests.
6. 'Signal Words' are found on pesticide product labels, and they describe the acute (short-term) toxicity of the formulated pesticide product. The signal word can be either: DANGER, WARNING, or CAUTION. Products with the DANGER signal word are the most toxic. Products with the signal word CAUTION are lower in toxicity.

INTEGRATED PEST MANAGEMENT (IPM) POLICY UPDATE

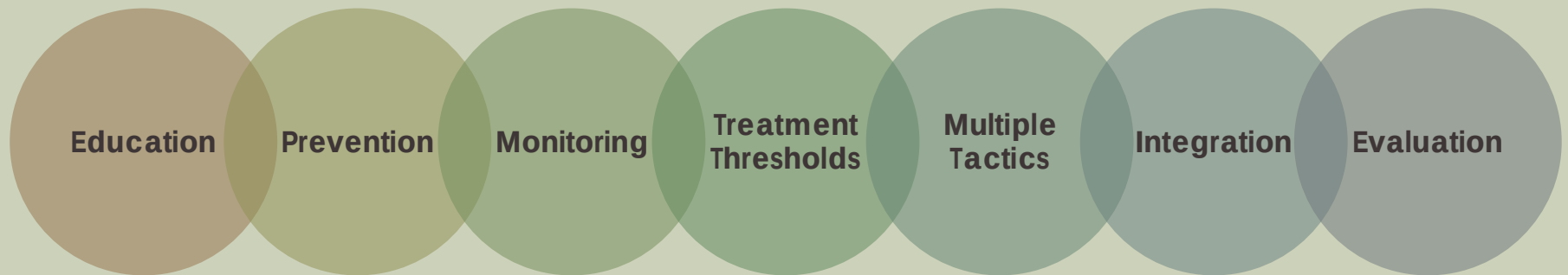


WHAT IS INTEGRATED PEST MANAGEMENT (IPM)?

An ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of pest-resistant varieties. Pesticides are used only after monitoring indicates that they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risk to human health, beneficial and non-target organisms, and the environment.

Source: [University of California State-wide Integrated Pest Management Program](#)

THE IPM CONCEPT: A DECISION MAKING FRAMEWORK

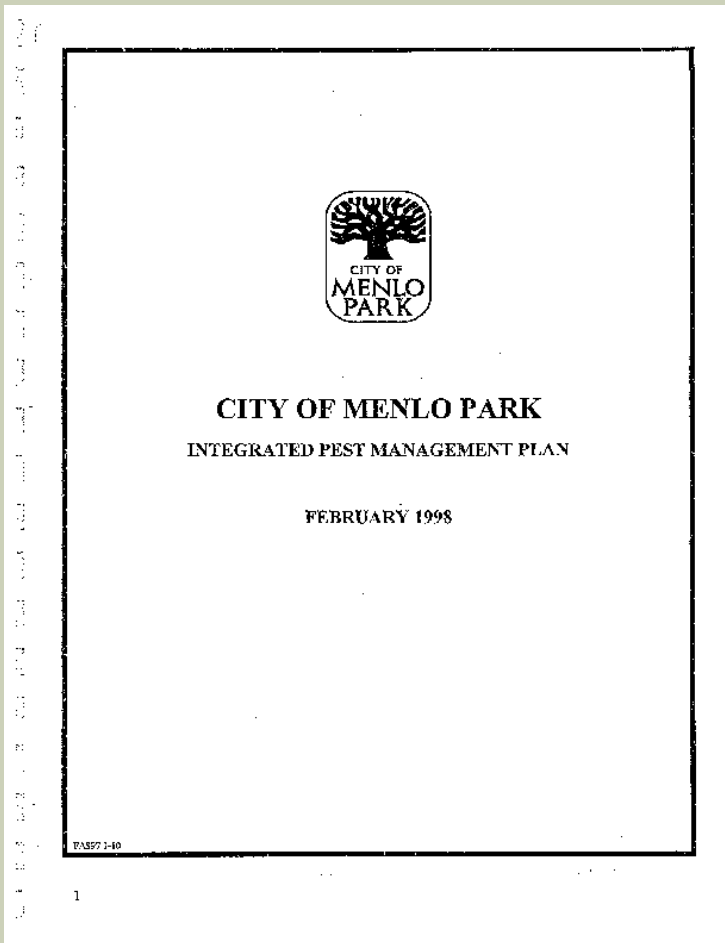


PURPOSE



- **Address community concerns**
- **Transparency**
- **Fulfill National Pollutant Discharge Elimination System (NPDES) Stormwater Permit requirements**
- **Inline with San Mateo County Water Pollution Prevention Program standards**

CURRENT POLICY



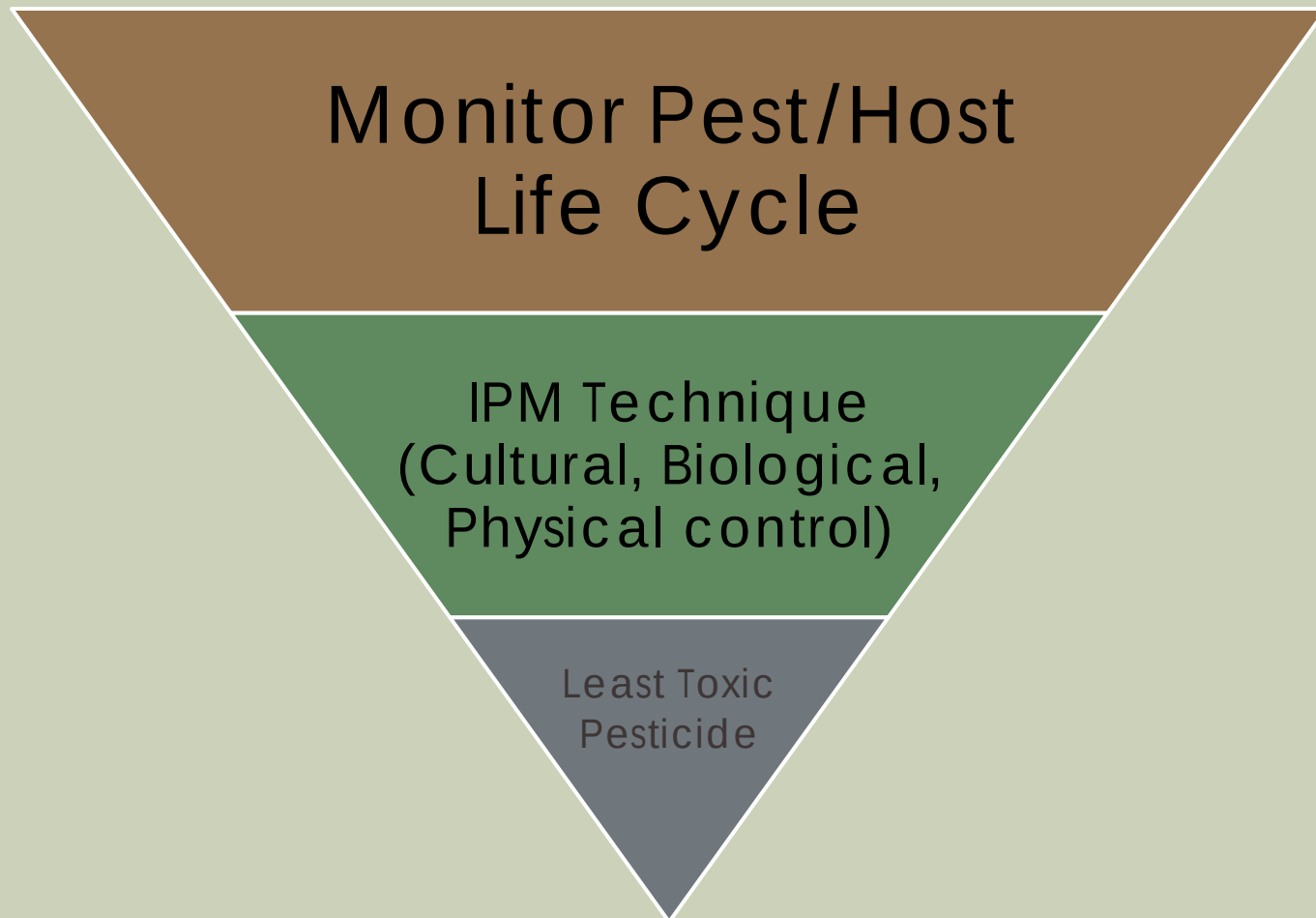
- **Out-dated**
 - **Allows Category II, III, & IV pesticide use**
- **Extensive 45 pgs.**

STAFF EDUCATION & TRAINING



- Department staff receive at least 20 hours of continued education units annually. Much of which is IPM based.
- Staff only applies Category III or IV herbicides using “Caution” signal word. These categories are the least toxic pesticides available.

HIERARCHY OF MENLO PARK IPM IMPLEMENTATION



MULCH



MOW



IPM TECHNIQUE

CULTURAL CONTROL:

*The use of
mulch and
mowing.*

BEFORE



AFTER



IPM TECHNIQUE

BIOLOGICAL CONTROL

*The use of
natural
predator
species,
parasites, or
grazing.*



IPM TECHNIQUE

PHYSICAL CONTROL:

*The use of
hand/
mechanical
removal, traps
and barriers.*



DEPARTMENT PESTICIDE USE



21%
Reduction

- In 1996, 25.1 gallons of herbicides were used on City staff maintained landscapes.
- In 2012, City staff maintained landscape increased by 11 acres and reduced herbicide use to 19.75 gallons.

SAN MATEO COUNTY WATER POLLUTION PREVENTION PROGRAM

IPM POLICY TEMPLATE



San Mateo Countywide Water Pollution Prevention Program Model Integrated Pest Management (IPM) Policy Template

GOAL

The [City/County of ____] seeks to protect the health and safety of its employees and the general public, the environment and water quality, as well as to provide sustainable solutions for pest control through the reduced use of pesticides on property including buildings owned or managed by the City/County by applying Integrated Pesticide Management principles and techniques. The municipal regional stormwater permit requires that the [City/County of ____] minimize reliance on pesticides that threaten water quality.

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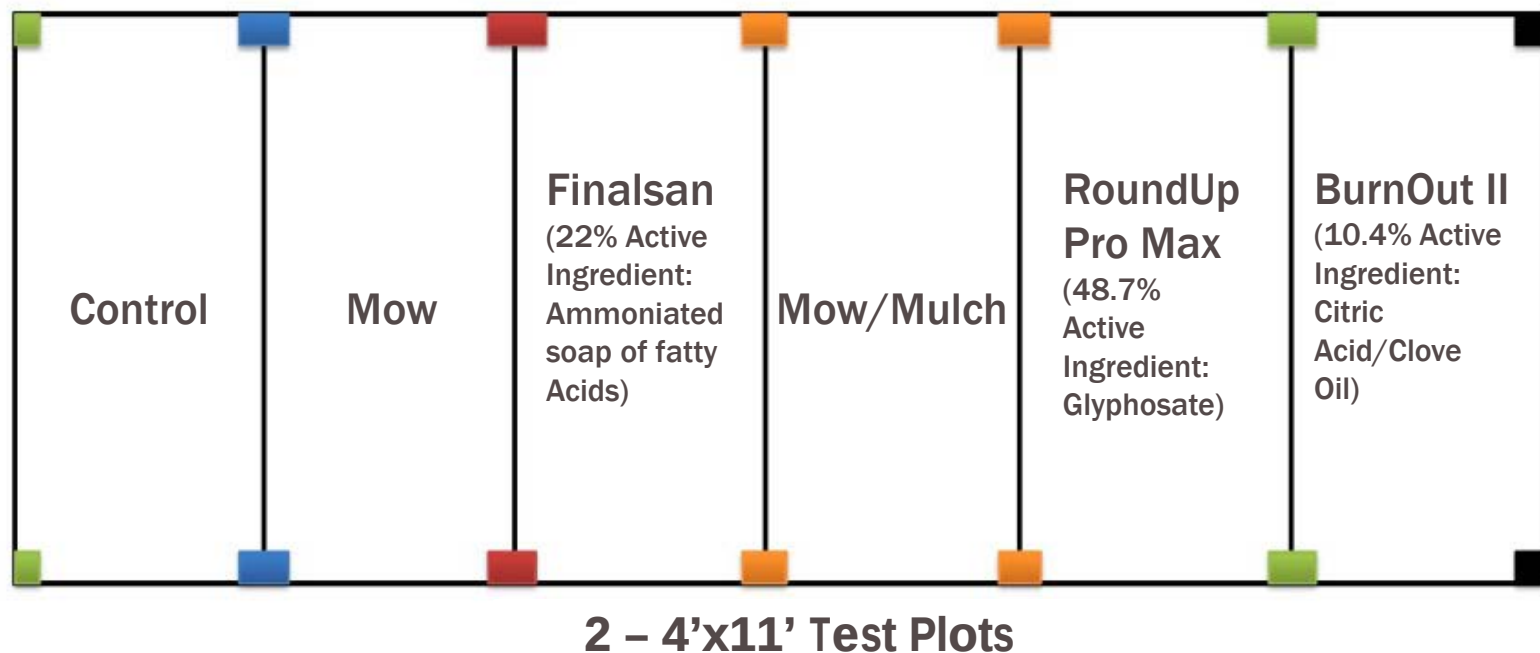
The IPM-based hierarchical decision making process that will be used to control pests will include the following:

1. Based on field observations evaluate locations and sites where pest problems commonly occur to determine pest population, size, occurrence, and natural enemy population, if present. Identify conditions that contribute to the development of pest populations, and decisions and practices that could be employed to manage pest populations

- Goal
- Required Use of IPM
- Background

THE EXPERIMENT

July 2014 – January 2015



THE EXPERIMENT RESULTS



- **RoundUp Pro Max**
 - Lowest application rates
 - Lowest cost
- **BurnOut II/Finalsan:**
 - Higher application rates
 - Higher costs per mixed rates
- **Mow/Mulch:**
 - Increase staff levels
 - Increase staff time

UPDATED IPM POLICY

City of Menlo Park		City Manager Policy	
Department City Manager	Page 1 of 4	Effective Date	
Subject DRAFT INTEGRATED PEST MANAGEMENT POLICY	Approved by	Procedure #	
	Department Head		
	City Manager		

GOAL

The City of Menlo Park seeks to protect the health and safety of its employees and the general public, the environment and water quality, as well as to provide sustainable solutions for pest control through the reduced use of pesticides on City property by applying Integrated Pesticide Management principles and techniques. The municipal regional stormwater permit requires that the City of Menlo Park minimize reliance on pesticides that may threaten water quality.

City of Menlo Park owned or managed property/facilities may include but is not limited to: parks and open space, golf courses, roadsides, landscaped medians, flood control channels and other outdoor areas, as well as municipal buildings and structures.

BACKGROUND

Integrated Pest Management (IPM) is an ecosystem-based strategy that focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of pest-resistant varieties. Pesticides are used only after monitoring indicates they are needed according to established guidelines, and treatments are made with the goal of removing only the target organism. Pest control materials are selected and applied in a manner that minimizes risks to human health, beneficial and nontarget organisms, and the environment. (Source: University of California State-wide Integrated Pest Management Project)

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TRAINING AND OUTREACH

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The City of Menlo Park will perform educational outreach and/or support Countywide or regional efforts to educate the community on a) goals and techniques of IPM, and b) pesticide related water quality issues consistent with the municipal regional stormwater permit's requirements.

THE IPM-BASED HIERARCHICAL DECISION MAKING PROCESS

The City, in carrying out its operations, shall assume pesticides are potentially hazardous to human and environmental health. City departments shall give preference to reasonably available nonpesticide alternatives when considering the use of pesticides on City property. For all pest problems on City property, City staff and City contractors shall follow the IPM approach outlined below, only proceeding to the next step if prior steps have been exhausted.

- Aligns with County Template
- Confirms commitment to reduce pesticide use
- Additional Options
 - Proposed pilot of herbicide-free pilot at selected parks
 - RFP for 12 herbicide-free parks

CHANGES IN LANDSCAPE



SYMBOL OF NEW BEGINNING



QUESTIONS



RESOLUTION NO.

RESOLUTION OF THE CITY COUNCIL OF THE CITY OF MENLO PARK URGING THE COMMUNITY NOT TO BUY AND SELL RAT AND MOUSE POISONS THAT DO NOT COMPLY WITH UNITED STATES ENVIRONMENTAL PROTECTION AGENCY'S NEW RISK REDUCTION STANDARDS THAT ARE NECESSARY TO PROTECT CHILDREN, PETS AND WILDLIFE FROM ACCIDENTAL EXPOSURE TO RODENT BAITS

WHEREAS, in 1998 the United States Environmental Protection Agency (US EPA) issued its Reregistration Eligibility Decisions (REDs) [Exhibit A] for rodenticides, which expressed concern about accidental human exposures to rodenticides as well as risks to wildlife but also recognized the public health benefits of rodenticides; and

WHEREAS, anticoagulant compounds, including brodifacoum, were detected by the California Department of Fish and Game in liver tissue of 26 of 30 endangered kit foxes screened for rodenticide residues from 1999 to 2007 [Exhibit B]; and

WHEREAS, between 1993 and 2007, the American Association of Poison Control Centers annually received reports of approximately 12,000 to 15,000 rodenticide exposures to children under the age of six and in 2011 it reported 8,312 cases of children under the age of six being exposed to long-acting anticoagulant rodenticides; and

WHEREAS, in 2008, the US EPA issued its Final Risk Mitigation Decision for Ten Rodenticides, and gave producers until June 2011 to discontinue manufacture and sale except as allowed in the Final Risk Mitigation Decision; and

WHEREAS, the US EPA is in the process of canceling and removing from the consumer market these mouse and rat poison products because they pose an unacceptable risk to children, pets and wildlife, but at this time these products are still being legally sold to Menlo Park residents.

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Menlo Park does hereby urge Menlo Park businesses to immediately stop the sale of rat and mouse poisons that would be prohibited under the US EPA's Risk Mitigation Decision for Ten Rodenticides; and

BE IT FURTHER RESOLVED that the City of Menlo Park does hereby urge Menlo Park residents to avoid buying rodent poisons and bait products, and instead use traps to control the rodent population.

I, Pam Aguilar, City Clerk of Menlo Park, do hereby certify that the above and foregoing Council Resolution was duly and regularly passed and adopted at a meeting by said Council on the 20th day of October, 2015, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this 20th day of October, 2015.

Pamela Aguilar
City Clerk



Reregistration Eligibility Decision (RED) Rodenticide Cluster

US EPA ARCHIVE DOCUMENT



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

CERTIFIED MAIL

Dear Registrant:

I am pleased to announce that the Environmental Protection Agency has completed its reregistration eligibility review and decisions on the rodenticide cluster pesticide case which includes the active ingredients brodifacoum, bromodialone, bromethalin, chlorophacinone and diphacinone and its sodium salt, and pival and its sodium salt. The enclosed Reregistration Eligibility Decision (RED), which was approved on **September 30, 1997**, contains the Agency's evaluation of the data base of these chemicals, its conclusions of the potential human health and environmental risks of the current product uses, and its decisions and conditions under which these uses and products will be eligible for reregistration. The RED includes the data and labeling requirements for products for reregistration. It also includes requirements for additional data (generic) on the active ingredients to confirm the risk assessments.

To assist you with a proper response, read the enclosed document entitled "Summary of Instructions for Responding to the RED." This summary also refers to other enclosed documents which include further instructions. You must follow all instructions and submit complete and timely responses. **The first set of required responses is due 90 days from the receipt of this letter. The second set of required responses is due 8 months from the date of this letter.** Complete and timely responses will avoid the Agency taking the enforcement action of suspension against your products.

Please note that the Food Quality Protection Act of 1996 (FQPA) became effective on August 3, 1996, amending portions of both pesticide law (FIFRA) and the food and drug law (FFDCA). This RED takes into account, to the extent currently possible, the new safety standard set by FQPA for establishing and reassessing tolerances. However, it should be noted that in continuing to make reregistration determinations during the early stages of FQPA implementation, EPA recognizes that it will be necessary to make decisions relating to FQPA before the implementation process is complete. In making these early case-by-case decisions, EPA does not intend to set broad precedents for the application of FQPA. Rather, these early determinations will be made on a case-by-case basis and will not bind EPA as it proceeds with further policy development and any rulemaking that may be required.

If EPA determines, as a result of this later implementation process, that any of the determinations described in this RED are no longer appropriate, the Agency will pursue whatever action may be appropriate, including but not limited to reconsideration of any portion of this RED.

If you have questions on the product specific data requirements or wish to meet with the Agency, please contact the Product Reregistration representative Venus Eagle at (703) 308-8045. Address any questions on required generic data to the Special Review and Reregistration Division representative Dennis Deziel at (703)308-8176.

Sincerely yours,

Lois A. Rossi, Director
Special Review and
Reregistration Division

Enclosures

**SUMMARY OF INSTRUCTIONS FOR RESPONDING TO
THE REREGISTRATION ELIGIBILITY DECISION (RED)**

1. **DATA CALL-IN (DCI) OR "90-DAY RESPONSE"**--If **generic data** are required for reregistration, a DCI letter will be enclosed describing such data. If **product specific data** are required, another DCI letter will be enclosed listing such requirements. If **both generic and product specific data** are required, a combined Generic and Product Specific letter will be enclosed describing such data. Complete the two response forms provided with each DCI letter (or four forms for the combined) by following the instructions provided. **You must submit the response forms for each product and for each DCI within 90 days of the date of this letter (RED issuance date); otherwise, your product may be suspended.**

2. **TIME EXTENSIONS AND DATA WAIVER REQUESTS**--No time extension requests will be granted for the 90-day response. Time extension requests may be submitted only with respect to actual data submissions. Requests for data waivers must be submitted as part of the 90-day response. Requests for time extensions should be submitted in the 90-day response, but certainly no later than the 8-month response date. All data waiver and time extension requests must be accompanied by a full justification. All waivers and time extensions must be granted by EPA in order to go into effect.

3. **APPLICATION FOR REREGISTRATION OR "8-MONTH RESPONSE"**--**You must submit the following items for each product within eight months of the date of this letter (RED issuance date).**

a. **Application for Reregistration** (EPA Form 8570-1). Use only an original application form. Mark it "Application for Reregistration." Send your Application for Reregistration (along with the other forms listed in b-e below) to the address listed in item 5.

b. **Five copies of draft labeling** which complies with the RED and current regulations and requirements. Only make labeling changes which are required by the RED and current regulations (40 CFR 156.10) and policies. Submit any other amendments (such as formulation changes, or labeling changes not related to reregistration) separately. You may delete uses which the RED says are ineligible for reregistration. For further labeling guidance, refer to the labeling section of the EPA publication "General Information on Applying for Registration in the U.S., Second Edition, August 1992" (available from the National Technical Information Service, publication #PB92-221811; telephone number 703-487-4650).

c. **Generic or Product Specific Data**. Submit all data in a format which complies with PR Notice 86-5, and/or submit citations of data already submitted and give the EPA identifier (MRID) numbers. Before citing these studies, you must **make sure that they meet the Agency's acceptance criteria** (attached to the DCI).

d. **Two copies of the Confidential Statement of Formula (CSF)** for each basic and each alternate formulation. The labeling and CSF which you submit for each product must comply with P.R. Notice 91-2 by declaring the active ingredient as the **nominal concentration**. You have two options for submitting a CSF: (1) accept the standard certified

limits (see 40 CFR §158.175) or (2) provide certified limits that are supported by the analysis of five batches. If you choose the second option, you must submit or cite the data for the five batches along with a certification statement as described in 40 CFR §158.175(e). A copy of the CSF is enclosed; follow the instructions on its back.

e. **Certification With Respect to Data Compensation Requirements.** Complete and sign EPA forms 8570-34 and 8570-35 for each product.

4. **COMMENTS IN RESPONSE TO FEDERAL REGISTER NOTICE**--Comments pertaining to the content of the RED may be submitted to the address shown in the Federal Register Notice which announces the availability of this RED.

5. **WHERE TO SEND PRODUCT SPECIFIC DCI RESPONSES (90-DAY) AND APPLICATIONS FOR REREGISTRATION (8-MONTH RESPONSES)**

By U.S. Mail:

Document Processing Desk (**RED-SRRD-PRB**)
Office of Pesticide Programs (7504C)
EPA, 401 M St. S.W.
Washington, D.C. 20460-0001

By express:

Document Processing Desk (**RED-SRRD-PRB**)
Office of Pesticide Programs (7504C)
Room 266A, Crystal Mall 2
1921 Jefferson Davis Hwy.
Arlington, VA 22202

6. **EPA'S REVIEWS**--EPA will screen all submissions for completeness; those which are not complete will be returned with a request for corrections. EPA will try to respond to data waiver and time extension requests within 60 days. EPA will also try to respond to all 8-month submissions with a final reregistration determination within 14 months after the RED has been issued.

REREGISTRATION ELIGIBILITY DECISION

RODENTICIDE CLUSTER

LIST B

CASES 2100, 2205, 2755, 2760, 2765, 2810

ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF PESTICIDE PROGRAMS
SPECIAL REVIEW AND REREGISTRATION DIVISION

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GLOSSARY OF TERMS AND ABBREVIATIONS

ADI	Acceptable Daily Intake. A now defunct term for reference dose (RfD).
AE	Acid Equivalent
a.i.	Active Ingredient
ARC	Anticipated Residue Contribution
CAS	Chemical Abstracts Service
CI	Cation
CNS	Central Nervous System
CSF	Confidential Statement of Formula
DFR	Dislodgeable Foliar Residue
DRES	Dietary Risk Evaluation System
DWEL	Drinking Water Equivalent Level (DWEL) The DWEL represents a medium specific (i.e. drinking water) lifetime exposure at which adverse, non carcinogenic health effects are not anticipated to occur.
EEC	Estimated Environmental Concentration. The estimated pesticide concentration in an environment, such as a terrestrial ecosystem.
EC ₅₀	Median Effective Concentration. The concentration at which 50% of an exposed test population is effected sublethally.
EP	End-Use Product
EPA	U.S. Environmental Protection Agency
FAO/WHO	Food and Agriculture Organization/World Health Organization
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FFDCA	Federal Food, Drug, and Cosmetic Act
FQPA	Food Quality Protection Act
FOB	Functional Observation Battery
GLC	Gas Liquid Chromatography
GM	Geometric Mean
GRAS	Generally Recognized as Safe as Designated by FDA
HA	Health Advisory (HA). The HA values are used as informal guidance to municipalities and other organizations when emergency spills or contamination situations occur.
HDT	Highest Dose Tested
LC ₅₀	Median Lethal Concentration. A statistically derived concentration of a substance that can be expected to cause death in 50% of test animals. It is usually expressed as the weight of substance per weight or volume of water, air or feed, e.g., mg/l, mg/kg or ppm.
LD ₅₀	Median Lethal Dose. A statistically derived single dose that can be expected to cause death in 50% of the test animals when administered by the route indicated (oral, dermal, inhalation). It is expressed as a weight of substance per unit weight of animal, e.g., mg/kg.
LD ₁₀	Lethal Dose-low. Lowest Dose at which lethality occurs.
LEL	Lowest Effect Level
LOC	Level of Concern
LOD	Limit of Detection
LOEL	Lowest Observed Effect Level
MATC	Maximum Acceptable Toxicant Concentration
MCLG	Maximum Contaminant Level Goal (MCLG) The MCLG is used by the Agency to regulate contaminants in drinking water under the Safe Drinking Water Act.
µg/g	Micrograms Per Gram
mg/l	Milligrams Per Liter
MOE	Margin of Exposure
MP	Manufacturing-Use Product
MPI	Maximum Permissible Intake
MRID	Master Record Identification (number). EPA's system of recording and tracking studies submitted.

N/A	Not Applicable
NOEC	No effect concentration
NPDES	National Pollutant Discharge Elimination System
NOEL	No Observed Effect Level
NOAEL	No Observed Adverse Effect Level
OP	Organophosphate
OPP	Office of Pesticide Programs
Pa	Pascal, the pressure exerted by a force of one newton acting on an area of one square meter.
PADI	Provisional Acceptable Daily Intake
PAG	Pesticide Assessment Guideline
PAM	Pesticide Analytical Method
PCO	Pesticide Certified Operator
PHED	Pesticide Handler's Exposure Data
PHI	Preharvest Interval
ppb	Parts Per Billion
PPE	Personal Protective Equipment
ppm	Parts Per Million
PRN	Pesticide Registration Notice
Q ₁ *	The Carcinogenic Potential of a Compound, Quantified by the EPA's Cancer Risk Model
RBC	Red Blood Cell
RED	Reregistration Eligibility Decision
REI	Restricted Entry Interval
RfD	Reference Dose
RS	Registration Standard
RUP	Restricted Use Pesticide
SLN	Special Local Need (Registrations Under Section 24 (c) of FIFRA)
TC	Toxic Concentration. The concentration at which a substance produces a toxic effect.
TD	Toxic Dose. The dose at which a substance produces a toxic effect.
TEP	Typical End-Use Product
TGAI	Technical Grade Active Ingredient
TLC	Thin Layer Chromatography
TMRC	Theoretical Maximum Residue Contribution
torr	A unit of pressure needed to support a column of mercury 1 mm high under standard conditions.
µg/L	Micrograms per liter
WP	Wettable Powder
WPS	Worker Protection Standard

ABSTRACT

The U. S. Environmental Protection Agency (EPA) has completed its reregistration eligibility decision of the pesticides brodifacoum, bromadiolone, chlorophacinone, diphacinone and its sodium salt, bromethalin, and pival and its sodium salt. This decision includes a comprehensive reassessment of the required target data and the use patterns of currently registered products. These chemicals are rodenticides used in urban, suburban, and rural areas for the control of commensal rodents. Chlorophacinone and diphacinone are also used in the field to control a variety of vertebrate pests, mainly rodents but also jackrabbits (lagomorphs), moles (insectivores), and mongoose (carnivores). With the exception of bromethalin, which is a neurotoxin, the chemicals being reregistered in this decision document are anticoagulants. With the exception of pival and its sodium salt, the Agency has concluded that the uses, as prescribed in this document, with additional labeling requirements and a number of risk mitigation measures, will not cause unreasonable risks to humans or the environment.

The Agency has determined that all uses of brodifacoum, bromethalin, and bromadiolone are eligible for reregistration.

The Agency has determined that all uses of chlorophacinone and diphacinone and its salt are eligible for reregistration, with the exception of certain field bait uses. The Agency has determined that field-bait uses containing .005% chlorophacinone and diphacinone and its salt are eligible for reregistration.

The Agency has determined that field-bait uses containing more than .005% chlorophacinone and diphacinone and its salt are ineligible for reregistration. Field tests have adequately demonstrated that products with lower-concentrations of these active ingredients are sufficiently efficacious for target pest species, and that the uses with higher concentrations have the potential to cause unnecessary secondary poisonings to avian and mammalian consumers.

The EPA has determined that all uses of pival and its sodium salts are ineligible for reregistration. Pival and its sodium salt was suspended by the Agency in December 1994 for failure of the registrant, Motomco, Incorporated, to respond to the Agency's Data Call-In Notice (DCI) and submit the required data to support the continued registration. In the future, EPA may seek cancellation of the registration for pival and its sodium salt.

Rodenticides, when used as currently sold and marketed, are responsible for a number of human incidents and accidental exposures each year. As with human exposures, EPA is concerned about the increased risk posed to non-target domestic animals, as well as primary and secondary risks to nontarget mammals and birds, from the use of rodenticides used. However, EPA also

recognizes the important public health benefits of rodenticides. Specifically, the Agency considered the benefits from rodent control relating to prevention of disease transmission, property damage, and attacks on humans.

In order to address the risk concerns posed from the use of these products and still maintain the benefits afforded by their use, the Agency has developed a two-phased approach to mitigating risk. The first phase will put into place in short-term measures that will serve to identify when an exposure has occurred, to lessen the amount of exposures, and monitor exposures. The second phase will reduce exposures in the long term. Ideally, the Agency would have preferred to impose measures to immediately eliminate opportunities for exposures; however, it recognizes that new technologies do not exist and must be developed to accomplish this while still maintaining the efficacy of the product. The Agency has therefore developed this phased approach to allow time for the development and testing of this new technology.

In addition, outside the scope of this RED process, the Agency is requiring similar risk mitigation measures to the registrations of other rodenticide active ingredients such as zinc phosphide, warfarin and salts, difethialone, vitamin D-3, and red squill and, if necessary, registrations of new rodenticide active ingredients.

The Agency recently became aware of incident data which suggests that there may be a potential incident problem specifically involving the active ingredient brodifacoum. At this time the Agency is reviewing the data; no final conclusions have been reached. Additionally, through the "Notice of Availability" for this document, the Agency requests state incident data on all rodenticides to better understand the extent of this potential problem. After review, the Agency may impose additional restrictions on the use of brodifacoum.

Phase One: Short-Term Risk Mitigation Measures

(A) Indicator Dye and Bittering Agent

All registrants of rodenticides, other than those with products used exclusively at agricultural sites, must incorporate an indicator dye into their formulations. The dye is intended to help identify whether a child or household pet has actually consumed a rodenticide by dying their mouth and/or hands a bright color. EPA believes the dye will play an important role in identifying when an exposure has occurred, thereby helping to determine if treatment is required. Typically, it is very difficult for parents and guardians of children and pet owners to discern whether an exposure or ingestion has actually occurred, which may lead to unnecessary treatment at a medical facility as a precautionary measure. In turn, the Agency believes this measure will also enable parents and guardians of children and pet owners to seek medical or veterinarian attention sooner rather than later and avoid a serious medical episode. EPA recognizes that many of the formulations currently contain a dye. All registrants may present data demonstrating that the current dye meets the intent of this requirement.

All registrants of rodenticides, other than those with products used exclusively at agricultural sites, must incorporate a bittering agent into their formulations to make the bait less palatable to humans. EPA believes that the bittering agent may cause some children to expel the

bait if placed in the mouth. The Agency is fully aware that children younger than one year old do not have fully formed taste buds and may not be fully protected by this measure. However, this measure should prevent some exposures to children older than one year of age. Likewise, the EPA is also aware that this measure may not affect exposures to non-target household animals.

(B) Improved Labeling Requirements

EPA is requiring a number of label revisions to rodenticide registrations. These requirements are set forth in Section V of this RED document and are in addition to those in PR Notice 94-7 that have already been implemented.

Labels which currently allow placement of rat and mouse baits “in and around buildings” must be amended to “indoors and against the outside walls of buildings.” Rat and mouse bait placements will be allowed “around” buildings only if registrants demonstrate from secondary toxicity testing that secondary risks to birds and mammals are likely to be minimal.

(C) Annual Submission of American Association of Poison Control Centers (AAPCC) Data

Under the authority of FIFRA section 3(c)(2)(B), the Agency is requiring registrants of rodenticides subject to this RED document, to submit to the Agency annual American Association of Poison Control Centers’ (AAPCC) data. The Agency is requiring AAPCC data for the years 1999 through 2009. Registrants are encouraged to share the cost of generating data, whenever appropriate. If needed, the Agency may ask registrants of rodenticides for additional annual submission of AAPCC data. These data will enable the Agency to determine whether the imposed risk mitigation measures are reducing incidents/exposures to humans, in particular children. AAPCC data obtained by the Agency for 1995 and 1996 will serve as baseline data.

(D) Restricted Use Classification for Tracking Powders

EPA has determined that the use of these chemicals as tracking powders in and around residences, schools, recreation areas, and other places that children may frequent, pose a significant risk to children, household pets, and non-target animals. EPA believes that children and pets can easily come in contact with rodenticides used as tracking powders simply based on their use patterns and use locations. To protect children and non-target animals from exposure, all products formulated as tracking powders must remain classified and labeled as restricted use because of acute toxicity and undue secondary risk to non-target species. Certified applicators receive training on the importance of following label directions and overall application, and, therefore are more likely to apply the product correctly. Moreover, tracking powder products must bear a strong precautionary statement and new restrictions limiting placement of powder to locations not accessible to children, household pets, and non-target animals.

EPA is also concerned about the potential exposure (inhalation and dermal) to the certified applicators of these types of product formulations. Due to the low inhalation LC_{50} value and the possibility of users inhaling or ingesting powders during pouring and application, EPA is limiting use of the powder formulations to use by certified applicators, EPA is requiring protective

eyewear and dust/mist respirators for such users in addition to other personal protective equipment.

(E) Restricted Use for Field Products

All products labeled for field uses, except for those limited to manual underground baiting, must be reclassified and relabeled as restricted use because of acute toxicity and high potential for primary and secondary risks to nontarget mammals and birds.

Phase Two: Long-Term Risk Reduction

The Agency believes that the required risk mitigation measures outlined in Phase One should be followed by further exposure/risk reduction measures for rodenticides. EPA is also aware that a safer technology, which is efficacious and equally effective to eliminate human and household pet exposures may not currently exist. However, the Agency will require the development of and movement into a new, safer rodenticide use technology. The EPA is convinced that development of this technology can be achieved. Therefore, Phase Two of the Agency's risk mitigation approach, is the requirement to move rodenticides into a safer use technology. To achieve this end, within 120 days of the issuance of the REDs, the Agency will form a Stakeholder group and hold a series of meetings to discuss means of significantly reducing exposures to children and pets. The Stakeholder group will consist of members from industry, states, CDC, CPSC, AAPCC, rodent control experts, members of environmental groups, the medical community, and the veterinary community.

The Agency will conclude the Stakeholder process within 9 months from the issuance of the REDs. The Agency expects, at the conclusion of this process, to have a recommendation on how to further mitigate risk to children and household pets and a implementation plan to achieve significant risk reduction.

Risk Mitigation Measures for Products Intended for Occupational Use

The Agency has determined that all labels for occupational use products require commercial handlers to wear gloves while handling these rodenticide chemicals not already contained in place packs to reduce dermal exposure unless registrants submit data which indicate there is no dermal exposure. The Agency has determined that occupational handlers (commercial applicators) must wear protective eyewear, and a dust mask/mist respirator when handling non-parafinized formulations of these chemicals such as meal or grain-based baits, unless these formulations are contained in place packs or the registrants can determine via data that there is no inhalation exposure. In addition, the Agency is requiring all occupational handlers who handle powder formulations or any other non-parafinized formulation of chlorophacinone to wear a dust/mist respirator and protective eyewear during open pouring and application unless registrants submit data indicating there is no inhalation exposure.

I. INTRODUCTION

In 1988, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) was amended to accelerate the reregistration of products with active ingredients registered prior to November 1, 1984. The amended Act provides a schedule for the reregistration process to be completed in nine years. There are five phases to the reregistration process. The first four phases of the process focus on identification of data requirements to support the reregistration of an active ingredient and the generation and submission of data to fulfill the requirements. The fifth phase is a review by the U.S. Environmental Protection Agency (referred to as "the Agency") of all data submitted to support reregistration.

FIFRA Section 4(g)(2)(A) states that in Phase 5 "the Administrator shall determine whether pesticides containing such active ingredient are eligible for reregistration" before calling in data on products and either reregistering products or taking "other appropriate regulatory action." Thus, reregistration involves a thorough review of the scientific data base underlying a pesticide's registration. The purpose of the Agency's review is to reassess the potential hazards arising from the currently registered uses of the pesticide; to determine the need for additional data on health and environmental effects; and to determine whether the pesticide meets the "no unreasonable adverse effects" criterion of FIFRA.

On August 3, 1996, the Food Quality Protection Act of 1996 (FQPA) (Public Law 104-170) was signed into law. FQPA amends both the Federal Food, Drug, and Cosmetic Act (FFDCA), 21 U.S.C. 301 et seq, and the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA), 7 U.S.C. 136 et seq. The FQPA amendments went into effect immediately. Among other things, FQPA amended the FFDCA by establishing a new safety standard for the establishment of tolerances. The FQPA does not, however, amend any of the existing reregistration deadlines set forth in Sec. 4 of FIFRA. Thus, EPA is embarking on an intensive process, including consultation with registrants, States, and other interested stakeholders, to make decisions on the new policies and procedures that will be appropriate as a result of enactment of FQPA. This process will include a more in-depth analysis of the new safety standard and how it should be applied to both food and non-food pesticide applications. However, in light of the statutory deadlines with respect to reregistration, the Agency will continue its ongoing reregistration program while it continues to determine how best to implement FQPA.

This document presents the Agency's decision regarding the reregistration eligibility of the registered uses of brodifacoum, bromadiolone, bromethalin, chlorophacinone, diphacinone and its sodium salt, and pival and its sodium salt. The document consists of six sections. Section I is the introduction. Section II describes these chemicals' uses, data requirements and regulatory history. Section III discusses the concerns regarding human health and environmental assessment based on the data available to the Agency. Section IV presents the reregistration decision for brodifacoum, bromadiolone, chlorophacinone, diphacinone and its sodium salt, bromethalin, and pival and its sodium salt. Section V discusses the reregistration requirements for brodifacoum, bromadiolone, chlorophacinone, diphacinone and its sodium salt, and bromethalin. Finally, Section VI contains the Appendices supporting this Reregistration Eligibility Decision. Additional details concerning the Agency's review of applicable data are available on request.

II. CASE OVERVIEW

A. Chemical Overview

Table 1 - Chemical Overview

Common/ Case Name	Reregistration Case #	OPP Chemical Code	Chemical Name	CAS Registry #	Empirical Formula	Structural Formula	Basic Manufacturer
Brodifacoum	2755	112701	3-[3-(4'-bromo[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one	56073-10-0	C ₃₂ H ₂₃ BrO ₃		Zenica; Bell Laboratories
Bromadiolone	2760	112001	3-[3-(4'-Bromo[1,1'-biphenyl]-4-yl)-3-hydroxy-1-phenylpropyl]-4-hydroxy-2H-1-benzopyran-2-one	28772-56-7	C ₃₀ H ₂₃ BrO ₄		Lipha; Bell Laboratories
Bromethalin	2765	112802	N-Methyl-2,4-dinitro-N(2,4,5-tribromophenyl)-6(trifluoromethyl)benzenamine	63333-35-7	C ₁₃ H ₇ Br ₃ F ₃ N ₃ O ₄		PM Resources.
Chlorophacinone	2100	67707	2-[(4-Chlorophenyl)phenyl acetyl]-1H-indene-1,3-(2H)-dione	3691-35-8	C ₂₃ H ₁₅ ClO ₃		Lipha
Diphacinone	2205	67701	2-(diphenylacetyl)-1,3-indanedione	82-66-6	C ₂₃ H ₁₆ O ₃		Bell laboratories; HACCO, Inc.
Pival	2810	67703	2-(trimethacetyl)-1,3-indanedione	83-26-1	C ₁₄ H ₁₄ O ₃		Motomco

B. Use Profile

The following table (Table 2) lists the sites, pests, formulations (as applied), and application methods for rodenticides covered by this RED document. These chemicals are for the control of mammal pests, particularly commensal rats and mice but also a variety of field rodents [note: commensal rodents are Norway rat, roof rat, and house mouse].

Table 2 - Use Profile

Category	Name of Rodenticide					
Sites	Pival	Diphacinone or its Sodium Salt	Chlorophacinone	Brodifacoum	Bromadiolone	Bromethalin
In/Around Buildings	X	X	X	X	X	X
Inside Transport/Cargo Vehicles				X	X	X
Sewers		X	X	X	X	X
Landfills		X				
Terrestrial Nonfood		X	X			
Forestry Plantings		X	X			
Nurseries		X				
Levees/Ditch banks		X	X			
Orchards (dormant or nonbearing)		X	X			
Small Grains		X				
Small Fruits (dormant or nonbearing)		X	X			
Terrestrial food Crops (bait boxes)		X	X			
Terrestrial Food Crops		X	X			
Artichokes			X			
Aquatic, Non-Food (bait boxes)		X	X			
Pests	Pival	Diphacinone or its Sodium Salt	Chlorophacinone	Brodifacoum	Bromadiolone	Bromethalin
Norway Rat	X	X	X	X	X	X
Roof Rat	X	X	X	X	X	X
House Mice	X	X	X	X	X	X
White-footed Mice		X	X			
Meadow Mice/Voles		X	X			
Ground Squirrels		X	X			
Chipmunks		X	X			
Jackrabbits		X	X			
Cottontail Rabbits		X				
Pocket Gophers		X	X			
Cotton Rats		X	X			
Wood Rats		X	X			
Rice Rats		X				
Florida Water Rat		X				
Muskrat		X	X			
Polynesian Rat		X				
Moles			X			
Mongoose		X				
FORMULATIONS (as applied)	Pival	Diphacinone or its Sodium Salt	Chlorophacinone	Brodifacoum	Bromadiolone	Bromethalin
Solid Baits	X	X	X	X	X	X
Liquid Sprays			X			
Liquid Baits (salt)	X	X				
Tracking Powders		X	X			
APPLICATION METHODS	Pival	Diphacinone or its Sodium Salt	Chlorophacinone	Brodifacoum	Bromadiolone	Bromethalin
Hand Placement	X	X	X	X	X	X
Hand Broadcast (field use)		X	X			
Ground Broadcast (field use)		X	X			
Aerial Broadcast (field use)		X	X			

1. Brodifacoum Summary of Use Patterns and Formulations

Brodifacoum (3-[3-(4-bromo[1,1-biphenyl]4-yl)-1,2,3,4-tetra-hydro-1-napthalenyl]4-hydroxy-2H-1-benzophyran-2-one) is a rodent control agent for use against commensal rats and mice only. It is an anticoagulant and is formulated as meal bait, paraffinized pellets, rat and

mouse bait ready-to-use place packs, and paraffin blocks. All end-use products contain 0.005 percent active ingredient.

Brodifacoum is currently registered for the control of rats and mice in and around farm structures, households and domestic dwellings, uncultivated agricultural and non-agricultural areas, inside transport vehicles, commercial transportation facilities, industrial areas, sewage systems, aircraft, ships, boats, railway cars, and food processing, handling, and storage areas and facilities. Application may be made as frequently as is necessary. Only general-use brodifacoum products are currently registered.

Baits and bait packs are placed at 15 to 30 foot intervals for rats and 8 to 12 foot intervals for mice. When bait blocks are used in sewage systems, wire is used to secure blocks above the high water mark. The maximum rates of application are 16 ounces of product per 15 foot interval for controlling commensal rats and 2 ounces of bait per 8 to 12 foot interval for controlling house mice. According to labels, all baits are to be placed out of the reach of children, pets, domestic animals, and nontarget wildlife, or in tamper-resistant bait stations. Tamper-resistant bait stations must be resistant to destruction by dogs and by children under 6 years of age, and must be used in a manner that prevents children from reaching into bait compartments and obtaining the bait. If the bait can be shaken from stations when they are lifted, stations must be secured or otherwise immobilized. Baits may be loaded into bait stations by hand (place packs, cakes, blocks, and slabs), or by using a scoop for loose baits (meal baits, grain baits) and pellets.

2. Bromadiolone Summary of Use Patterns and Formulations

Bromadiolone (3-(3-(4'-bromo-(1,1'-biphenyl)-4-yl)-3-hydroxy-1-phenylpropyl)-4-hydroxy-2H-1-benzopyran-2-one) is a rodent control agent for rats and mice in and around buildings, inside transport vehicles and sewers. It acts as an anticoagulant and is formulated as meal bait, paraffinized pellets, rat and mouse bait ready-to-use place packs, and paraffin blocks, (all formulations contain 0.005 percent a.i.).

Baits and bait packs are placed at 15 foot intervals for rats and 8 foot intervals for mice. When bait blocks are used in sewage systems, wire is used to secure blocks above the high water mark. The maximum rates of application are 16 oz per 15 ft interval for controlling commensal rats and 2 oz of bait per 8 ft interval for house mice. According to labels, all baits are to be placed out of the reach of children, pets, domestic animals and nontarget wildlife, or in tamper-resistant bait stations. Bait stations must be resistant to destruction by dogs and by children under 6 years of age, and must be used in a manner that prevents children from reaching into bait compartments and obtaining bait. If the bait can be shaken from stations when they are lifted, stations must be secured or otherwise immobilized.

3. Bromethalin Summary of Use Patterns and Formulations

Bromethalin (N-methyl-2,4-dinitro-N-(2,4,6-tribromophenyl)-6-(trifluoromethyl)benzenamine) is a rodent control agent for use against roof rats, Norway rats, and house mice in and around buildings and in transport vehicles. It is a single-dose poison that blocks nerve transmissions. Bromethalin is formulated as paraffinized blocks, meal bait, "all-weather bait," bait pellets, bait cups, place packs, bait packs, rat pellets, mouse pellets, and "mouse poison bait

stations.” All products are 0.01 percent a.i., with the exception of one, which is 0.005 percent active ingredient.

Bromethalin is currently registered for the control of commensal rats and mice in and around sewers, homes, industrial and agricultural buildings, and similar man-made structures. It may also be used in alleys located in urban areas, inside transport/cargo vehicles such as ships, trains, and aircraft, and in and around related port or terminal buildings. Baits may be placed in rodent burrows. Placement of bromethalin formulated as pellets or meal baits is prohibited in sewers. Baits are not to be applied to water or areas where surface water is present, or where there is the possibility of contaminating food or surfaces that come in direct contact with food. Applications may be made as frequently as necessary. At this time the Agency is aware of only general-use bromethalin products.

The maximum application rate is 8 ounces of bait per 15 foot interval for controlling commensal rats and 3 ounces of bait per 8-foot interval for controlling house mice. Several labels recommend baiting rodent burrows. When baiting rodent burrows, labels specify inserting bait into the burrow far enough so only a person who knows the bait is there would be likely to see it.

Bromethalin product labels specify that baits are to be applied in locations out of the reach of children, pets, domestic animals and non-target wildlife, or in tamper-resistant bait stations. Bait stations must be resistant to destruction by dogs and by children under six years of age, and must be used in a manner that prevents children from reaching into bait compartments and obtaining bait. If bait can be shaken from stations when they are lifted, stations must be secured or otherwise immobilized.

4. Chlorophacinone Summary of Use Patterns and Formulations

Chlorophacinone 2-[(p-chlorophenyl)phenylacetyl] 1,3-indandione is a vertebrate control agent used to control a variety of vertebrate pests, mainly rodents, but also jackrabbits (lagomorphs), and moles (insectivores). It is an anticoagulant and is formulated as tracking powder, (0.2% a.i.) as loose-grain bait, paraffinized pellets, rat and mouse bait ready-to-use place packs, and paraffin blocks. Baits are mostly formulated as 0.005 % active ingredient, but some 0.01% active ingredient baits are registered. Chlorophacinone is currently registered for the control of rodents in and around buildings, households and domestic dwellings, uncultivated agricultural and non-agricultural areas, commercial transportation facilities; industrial areas, and food processing, handling, and storage areas and facilities. Baits are applied as frequently as needed only for commenal rats and mice; most field uses have a limited number of applications. Both general use and restricted use chlorophacinone products are currently registered.

For chlorophacinone, as well as all the rodenticides discussed in this RED, baits and bait packs are placed at 15 to 30 foot intervals for rats and 8 to 12 foot intervals for mice. The rate of application is 16 ounces of bait per 15 foot interval for controlling commensal rats and 2 ounces of bait per 8 foot interval for controlling housemice. According to labels, all baits are to

be placed out of the reach of children, pets, domestic animals and nontarget wildlife, or in tamper resistant bait stations. Bait stations must be resistant to destruction by dogs and by children under 6 years of age, and must be used in a manner that prevents children from reaching into bait compartments and obtaining bait. If bait can be shaken from stations when they are lifted, stations must be secured or otherwise immobilized. Baits may be loaded into bait station by hand (place packs, cakes, blocks, and slabs), or by using a scoop for loose baits (meal baits, grain baits) and pellets.

Twenty states currently have special local needs (SLNs) registrations for field uses of Chlorophacinone. Most SLNs are for control of meadow and/or pine voles in orchards (17 states), mainly dormant fruit orchards, or for control of ground squirrels (8 states). Most products are food baits (pellets or treated whole grains), but a spray concentrate exists for vole control (4 states). Other SLNs include control of moles in Oregon and Washington; jackrabbits in Oregon and California; and pocket gophers, ground squirrels, deer mice, chipmunks, muskrats, woodrats, and commensal rats and mice in California.

5. Diphacinone Summary of Use Patterns and Formulations

Diphacinone and salt 2-(diphenylacetyl)-1,3-Indandione products are formulated predominantly as 0.005% a.i. food baits (loose bait, feeder boxes, place packs, or paraffinized bait blocks) for control of commensal rats (Norway rat, roof rat) and mice (house mouse). Food baits also are registered for controlling ground squirrels and pocket gophers. One product is registered as a tracking powder (0.2% a.i.) for control of rats and mice indoors and at burrows located along the periphery of buildings. Because Diphacinone salt is highly soluble, it is also used to prepare water baits for indoor control of rats and mice. Use sites for rat and mouse food baits are predominantly in and around buildings and similar man-made structures. Some labels include sewers or other wet or damp sites such as dumps, irrigation ditches, along fences, gullies, and other such areas. Ground squirrels can be baited in bait stations placed in or near levee or ditch banks, around farm buildings, along fence lines, in orchards, in or near crops, and in noncrop areas. Pocket gophers can be baited in underground burrow systems located in rangeland, cropland, forest, and noncrop areas.

Twenty-three states currently have one or more special local needs (SLNs) registrations for field uses of Diphacinone. Most SLNs are for control of meadow and/or pine voles in dormant or non-bearing orchards and tree plantations or for control of ground squirrels. Other SLNs target meadow voles around perimeters of small grain crops in Washington and Idaho, commensal rats, cotton rats, rice rats, and Florida water rats in noncrop areas adjacent to crop fields in Florida, mongoose and commensal rats, including the Polynesian rat, in forests, offshore islands, and other noncrop outdoor areas in Hawaii, and deer mice, jackrabbits, chipmunks, muskrats, woodrats, voles, and commensal rats and mice in California.

C. Estimated Usage of Pesticide

The total annual usage of the rodenticides included in this RED is estimated to have been about 250,000 lbs. of active ingredient over the last few years [Note: usage data based on proprietary information].

Pest control operators (PCOs) use rodenticides primarily to control mice and rats in residential, industrial and institutional buildings. The majority of PCOs use single dose anticoagulants. Brodifacoum and bromadiolone-based products account for virtually all sales of single dose anticoagulants.

According to proprietary sources, approximately 60 percent of total rodenticides used by PCOs are for the commercial (non-residential) segment of the market. Residential applications account for approximately 40%. Local health departments contract PCOs, who primarily use anticoagulant rodenticides like brodifacoum, bromadiolone, chlorophacinone and diphacinone.

Over the past few years, the single dose anticoagulant brodifacoum represented about 30 percent of total pounds of rodenticide active ingredient. Bromadiolone ranked second with about 20 percent of the rodenticide market. Multiple-dose anticoagulants chlorophacinone and diphacinone, and the acute poison bromethalin accounted for another 20 percent market share.

D. Data Requirements

Appendix B includes all data requirements identified by the Agency for currently registered uses needed to support reregistration.

E. Regulatory History

The Agency's predecessor, the U.S. Department of Agriculture (USDA), first regulated vertebrate control agents after Congress passed FIFRA in 1947. During the initial year of regulation, the USDA registered the four mammalian poisons: strychnine, strychnine sulfate, zinc phosphide and red squill. Two of these chemicals are still registered 50 years later, but with several restrictions.

This Reregistration Eligibility Decision (RED) covers the neurotoxin bromethalin and five anticoagulant active ingredients (brodifacoum, bromethalin, bromadiolone, chlorophacinone and diphacinone and its sodium salt) applied as baits or tracking powders to control small mammals, such as rodents. This RED covers 243 of the currently registered 406 products, including Section 3 and 24(c) used to control vertebrate pests by baits and tracking powders. However, decisions made in this RED may impact many of the remaining 182 vertebrate control products, which were the subject of past REDs (e.g., warfarin and its sodium salt, strychnine and strychnine sulfate), or those that will be the subject of future reregistrations (e.g., difethialone, zinc phosphide, cholecalciferol/Vitamin D-3).

The following table (Table 3) includes all active ingredients with use patterns similar to those chemicals covered by this RED document and, those active ingredients (e.g., fumarin and its sodium salt) that are no longer registered.

Table 3 includes the name of each active ingredient grouped under "Anticoagulant Rodenticides" or "Other Rodenticides". Also, the table groups the anticoagulants by structural similarity and indicates which groups are considered to be "multiple-dose" or "single-dose" toxicants. Multiple-dose anticoagulants require repeated feedings over several days to kill, but

single-dose ones typically require only a single-day's feeding. Brodifacoum and bromadiolone are considered "second-generation" anticoagulants because they are capable of killing rats that are resistant to warfarin, the original "first generation" anticoagulant rodenticide, which was registered in 1950.

Table 3 also lists the year of first registration and the current numbers of interstate (section 3 of FIFRA) and intrastate (section 24(c)) products.

Table 3 - Regulatory History of Mammalian Toxicants Used as Baits and Tracking Powders. The names of active ingredients covered by this RED are bold.

Name of Active Ingredient/Type of Rodenticide		Year First Registered	Number of Products	
			Sec 3	Sec 24(c)
I. ANTICOAGULANT RODENTICIDES				
A. Type I, 4-hydroxycoumarin - Multiple-Dose	1. Warfarin	1950	40	0
	2. Sodium Salt of Warfarin	1954	1	0
	3. Fumarin	1954	0	0
	4. Sodium Salt of Fumarin	1958	0	0
B. Type I, 1,3 indandione - Multiple-Dose	1. Pival	1953	4	0
	2. Sodium Salt of Pival	1954	1	0
	3. Calcium Salt of Pival	1967	0	0
	4. PMP	1962	0	0
	5. Calcium Salt of PMP	1963	0	0
C. Type II, 1,3 indandione - Multiple-Dose	1. Diphacinone	1960	61	40
	2. Sodium Salt of Diphacinone	1962	5	0
	3. Chlorophacinone	1971	16	43
D. Type II, 4-hydroxycoumarin - Single-Dose	1. Brodifacoum	1979	32	0
	2. Bromadiolone	1980	27	0
	3. Difethialone	1995	6	0
II. OTHER RODENTICIDES				
A. Single-Dose	1. Strychnine	1947	39	6
	2. Strychnine Sulfate	1947	0	0
	3. Red Squill (Scilliroside)	1947	0	0
	4. Zinc Phosphide	1947	40	20
	5. Bromoethalin	1984	19	0
B. Multiple-Dose	1. Cholecalciferol (Vitamin D-3)	1984	4	1

III. SCIENCE ASSESSMENT

A. Physical Chemistry Assessment

Table 4 - Physical Chemistry Assessment

Common/Case Name	Brodifacoum	Bromadiolone	Bromethalin	Chlorophacinone	Diphacinone	Pival
Reregistration Case #	2755	2760	2755	2100	2205	2810
OPP Chemical Code	112701	112001	112802	67707	67701	67703
Color	Cream	White	White Crystals	Pale Yellow	White	Data Gap
Physical State	Fine Powdery Solid	Powdered Solid	Powder at 25°C	Microcrystalline Powder	Powder at Rm. Temp.	Data Gap
Odor	Not Reported	Odorless	Not Available	Not Reported	Not Reported	Data Gap
Melting Point	Decomposes at 201 - 205°C	198 - 199.8°C	148.2 - 154.1°C	141 - 145°C	141 - 145°C	Data Gap
Bulk Density	1.42 g/cm ³	1.5164 g/ml	2.169 ± 0.001 g/ml at 23°C	0.56 g/cc	1.87 g/ml	Data Gap
Solubility	Water at pH 5.2 0.00 7.4 0.24 9.3 1.00 Hexane 0.00 88 0.00 Toluene 0.72 Dichloromethane 5.00 Acetone 2.30 Acetonitrile 0.32 Methanol 0.27	Mean Solubility (g/100 ml Solvent) Water 1.25 x 10 ⁻³ Hexane 7.15 x 10 ⁻⁴ Methanol 6.93 x 10 ⁻¹	Data Gap	Water 0.002 Dichloromethane 30.2 Chloroform 28.7 Ethyl Acetate 3.08 Acetone 1.93 Diethyl Ether 1.13 Hexane 0.113 Methanol 0.109 Ethanol 0.074	Data Gap	Data Gap
Dissociation Constant	Not Reported	Not Applicable/Very Low Water Solubility	Waived	Waived	Waived	Data Gap
Octanol/Water Partition Coefficient	8.5	Log P _{ow} = 4.27	P _{ow} = 1.8 x 10 ⁴ Log P _{ow} = 4.26	Log P _{ow} = 4.22	Log P _{ow} = 4.27	Data Gap
Stability	Stable for 14 days at 54°C	Stable for 14 days at 54°C Not Stable in Sunlight (> 99% degradable)	Data Gap	Stable for 14 days at 54°C	Stable for 14 days at 54°C	Data Gap

B. Human Health Assessment

1. Toxicology Assessment

The toxicological data bases for, brodifacoum, bromadiolone, chlorophacinone, diphacinone and its sodium salt, and bromethalin are adequate and will support reregistration eligibility.

a. Acute Toxicity

(1) Brodifacoum Acute Toxicity

Results of the acute toxicity studies conducted with technical brodifacoum are summarized below in Table 5:

Table 5 - Acute Toxicity Values of Technical Brodifacoum

Route	Species	Results	MRID	Toxicity Category
Oral	Rat	LD ₅₀ (M) = 0.418 mg/kg LD ₅₀ (F) = 0.561 mg/kg	42687501	I
Dermal	Rabbit	LD ₅₀ (M) = 5.21 mg/kg LD ₅₀ (F) = 3.16 mg/kg	42232101	I
Inhalation	Rat	LC ₅₀ (M) = 4.86 µg/L LC ₅₀ (F) = 3.05 µg/L	43110501	I
Eye Irritation ^a	Rabbit	Some minor eye irritation, clearing by day 7.	66938	III
Skin Irritation ^a	Rabbit	Unlikely to cause anything more than mild irritation; the high toxicity (note the dermal LD ₅₀ values above) precludes necessity for testing the technical for dermal irritation potential.	None	-
Dermal Sensitization ^{a,b}	Guinea Pig	Non sensitizer	None	N/A

^a Not required for TGAI, however, presented here for informational purposes.

^b Conducted on the 0.25% Brodifacoum Formulation Concentrate; see below.

In an oral LD₅₀ study in which technical brodifacoum (96.1%) was administered as a suspension in polyethylene glycol to 300 rats, there were no mortalities or signs of toxicity in males or females at 0.25 mg/kg, nor in males at 0.35 mg/kg (females were not tested at this dose level). However, 5/5 males and 1/5 females died following dosage at 0.5 mg/kg, and 5/5 females died following dosage at 0.75 mg/kg (males were not tested at this dose level). Signs of toxicity at 0.5 and 0.75 mg/kg included pallor, bleeding from the nose and/or rectum and/or other sites. Deaths occurred in the period from 3-8 days after dosing. *Post mortem* examination of those animals that died or were sacrificed *in extremis* and/or showed signs of bleeding, revealed the presence of free or clotted blood in the abdominal and/or thoracic cavity. Discoloration or pallor of a number of organs was also observed. These findings are consistent with the known anticoagulant activity of brodifacoum. The LD₅₀ is calculated to be 0.418 mg/kg for males (95% confidence interval between 0.35 and 0.5 mg/kg) and 0.561 mg/kg for females (95% confidence interval 0.472-0.667 mg/kg). These results place brodifacoum in Toxicity Category I (MRID 42687501) by the oral exposure route.

In a dermal LD₅₀ study with rabbits, brodifacoum technical (95.6%) was applied as a suspension in corn oil (500 mg/kg), olive oil (10 mg/kg), or polyethylene glycol 600 (1 mg/kg), with 24-hour occluded dermal exposure. At 500 mg/kg, all the males were euthanized *in extremis* on days 5-6, and all females between days 5 and 8. At 10 mg/kg, 4/5 males were found dead or were euthanized *in extremis* between days 7 and 11, and 5/5 females between days 6 and 8. The animals that died or were euthanized showed signs of extreme toxicity consistent with anticoagulant activity (pallor, bleeding/bruising, breathing abnormalities) immediately prior to death. There were practically no signs of skin irritation on any of the animals. The dermal LD₅₀ of brodifacoum technical was calculated to be 5.21 mg/kg (95% confidence interval 1.95-13.8 mg/kg) for males, and 3.16 mg/kg (95% a.i. 1.00-10.00 mg/kg) for females. These results place technical brodifacoum in toxicity category I (MRID 42232101) in terms of dermal toxicity potential.

In an inhalation LC₅₀ study in rats, groups of young adult Wistar-derived rats, 5/sex, were exposed (nose only) for 4 hours to aerosols of brodifacoum (96.1% a.i.) generated from an acetone solution. The mean particulate concentrations were 0.82, 1.88, or 4.96 µg/L; corresponding brodifacoum concentrations were 0.69, 1.72 or 4.40 µg/L. The mass median diameters were 0.80, 0.89 and 0.68 µm, and the geometric standard deviations were 3.09, 1.91 and 2.54, respectively. Animals were observed for 14 days after exposure. Mortalities (accompanied by symptoms consistent with anticoagulant activity) occurred on days 4-6 in 3/5 males and 5/5 females exposed to the highest concentration (4.96 µg/L). The inhalation LC₅₀ for males = 4.86 µg/L (based on particulate concentration), and for females = 3.05 µg/L. Brodifacoum technical (96.1%) is in toxicity category I (inhalation LC₅₀ at or below 50 µg/L) based on the LC₅₀ values in both sexes (MRID 43110501).

In an eye irritation study in rabbits, aliquots of 100 mg technical brodifacoum (92.5%) were instilled in the conjunctival sac of the left eye in each of 9 New Zealand white rabbits. Three of the rabbit eyes were irrigated for one minute with lukewarm tap water starting 30 seconds after instillation of the test material. In some of the rabbits, there was subsequent iritis and/or slight redness of the conjunctivae with slight chemosis and discharge; with all irritation clearing by day 7. Brodifacoum technical (92.5%) is in toxicity category III in terms of eye irritation potential (MRID 00066938). However, it is noted that because of the high toxicity of brodifacoum, absorption of any significant amount of the technical material by the ocular exposure route might result in mortality (and the animals in this study were followed for only 7 days after exposure). Technical brodifacoum is in toxicity category III in terms of its ocular irritation potential.

There are no dermal irritation studies on technical brodifacoum. Because of the relatively high toxicity, dermal exposure to undiluted (or mixtures containing a relatively high percentage of) technical brodifacoum would probably be fatal (the dermal LD₅₀ of brodifacoum technical in rabbits is given above as 5.21 mg/kg for males, and 3.16 mg/kg for females).

Because of the high toxicity of technical brodifacoum, end-use products (mostly containing 0.005% brodifacoum) are usually manufactured from a formulation containing 0.25% brodifacoum. Results of the acute toxicity studies conducted with brodifacoum Formulation Concentrate are summarized below in Table 6:

Table 6 - Acute Toxicity Values of Brodifacoum Formulation Concentrate (0.25%)

Route	Species	Results	Toxicity Category	MRID
Oral	Rat	LD ₅₀ (M) = 163 mg/kg LD ₅₀ (F) = 152 mg/kg	II	44021701
Dermal	Rat ^a	LD ₅₀ (M) > 2000 mg/kg LD ₅₀ (F) > 2000 mg/kg	III	44021702
Skin Irritation	Rabbit	Test material stained the skin pink at application site, but no indication of an inflammatory response	IV	44021703
Dermal Sensitization	Guinea Pig	Evaluation complicated by pink staining at the application site, but no evidence of a sensitization response.	N/A	44021704

^aStudy conducted with rats; however, rabbits may be a more sensitive species

In an acute oral toxicity study (MRID No. 44021701), groups of fasted, young Alpk:APfSD (Wistar-derived) rats, 5/sex were given a single oral dose of brodifacoum Formulation Concentrate (active ingredient: brodifacoum: label declaration 0.25%; analytical concentration 0.259%) in deionized water at doses of 50, 200, or 500 mg/kg (males), and doses of 100, 150 or 200 mg/kg (females), and were subsequently observed for 14 days.

LD₅₀ Males = 163 (95% C.I.: 97-275) mg/kg
 Females = 152 (95% C.I.: 132-175) mg/kg
 Combined = not reported

Brodifacoum Formulation Concentrate (0.25%) is in toxicity category II based on the oral LD₅₀ in both sexes.

Animals that died or subsequently showed symptoms were generally normal through day 4; symptoms (decreased activity, pallor, piloerection, stains around nose) in some animals were observed only on the day of (or the day before) death. Some rats that were found dead had showed no previous signs of toxicity. Mortalities occurred 4-7 days after dosing. Necropsy findings in rats that died included pallor of the kidney, liver, lung, pancreas and spleen, and clotted and/or free blood in the thymus and/or thoracic cavity, consistent with the anticoagulant activity of brodifacoum. There were no consistent effects on body weight.

In an acute dermal toxicity study (MRID No. 44021702), a group of five male and two groups each with five female young adult Alpk:APfSD (Wistar-derived) rats received a single 24-hour occluded dermal exposure to 2000 mg/kg undiluted brodifacoum Formulation Concentrate (active ingredient: brodifacoum: label declaration 0.25%; analytical concentration 0.259%). At 24 hours the application site was cleansed with cotton swabs. In order to prevent ingestion of any residual material, rats were fitted with collars that were kept in place until day 4 for the males and first group of females, and throughout the observation period for the second group of females. The animals were observed for 14 days following removal of the occlusive dressings. 1/5 males and 2/10 females died on days 7-9 with symptoms consistent with anticoagulant activity. One of the dead females was reported to have chewed and partly removed the dressing.

Dermal LD₅₀ Males > 2000 mg/kg
 Females > 2000 mg/kg
 Combined > 2000 mg/kg

Brodifacoum Formulation Concentrate (0.25%) is in Toxicity Category III in terms of dermal toxicity potential, based on the dermal LD₅₀ values in both sexes. It is noted that this study was conducted with rats as opposed to rabbits. Rats may be a less sensitive species than rabbits which are generally used in dermal toxicity studies.

Among the survivors, one female showed bruising at the application site on days 10-15. Necropsy findings (pallor of the brain, liver, lung, pancreas and/or spleen) for animals that were euthanized in extremis were consistent with anticoagulant activity of brodifacoum. Survivors all gained weight.

In a primary dermal irritation study (MRID No. 44021703), a group of six female young adult rabbits (New Zealand white), weights ranging from 3940-4290 g, each received a single 4-hour occluded dermal exposure to 0.5 ml of undiluted brodifacoum formulation concentrate (0.25% a.i.), with scoring for dermal irritation within the first hour after removal of the occlusive wrap, and at 1, 2 and 3 days. There was slight edema in one rabbit, which occurred within one hour following exposure. The test material stained the skin pink at the application sites thereby preventing full assessment of erythema. However, subsequent histopathological examination of application and unexposed skin sites showed no indications of an inflammatory response associated with exposure to the test material.

Brodifacoum formulation concentrate (0.25%) is in Toxicity Category IV in terms of dermal irritation potential, based on the lack of any significant irritation (slight edema observed in only one animal within one hour following exposure, and lack of inflammatory response observed in histopathological examination).

In a dermal sensitization study (MRID 44021704) with brodifacoum Formulation Concentrate (0.25% a.i.), administered at challenge undiluted and as 30% and 10% w/v suspensions in deionized water, young adult Crl:(HA)BR male guinea pigs were tested using the method of Buehler. There were no indications of a sensitization reaction, although evaluation was complicated by pink staining at the application sites. Skin samples were examined histopathologically, with no indications of a significant inflammatory response. In this study, brodifacoum Formulation Concentrate (0.25% a.i.) is not a dermal sensitizer.

(2) Bromadiolone Acute Toxicity

The acute toxicity data for bromadiolone are summarized in Table 7.

Table 7 - Acute Toxicity Values for Bromadiolone

Study	Results	Category	MRID
Oral LD ₅₀ -rat ^a	between 0.56 and 0.84 mg/kg	I	41900001
Dermal LD ₅₀ -rabbit	1.71 mg/kg	I	42673701
Acute inhalation LC ₅₀ -rat	0.43 µg/kg	I	4197690
Eye irritation-rabbit	Irritation cleared by 4 days	III	88113
Dermal irritation-rabbit	Minimally irritating	IV	88112
Dermal sensitization	Not a dermal sensitizer	n/a	41847401

^aThis study was conducted with a concentrate which provides an understanding of the acute oral toxicity of bromadiolone.

A number of acute toxicity studies have been conducted with bromadiolone in the technical form or as a concentrate. The acute oral LD₅₀ in rats was tested using a concentrate (2.5 gm/L) and doses were between 0.56 and 0.84 mg/kg (Toxicity Category I, MRID 41900001). An acceptable acute oral toxicity study with technical grade is currently unavailable, but the available data indicate that bromadiolone is very toxic. Requiring another acute oral toxicity with the technical grade may not add more information than what is currently available. The acute dermal LD₅₀ in rabbits was 1.71 mg/kg (Toxicity Category I, MRID No. 42673701. This study satisfies Guideline 81-2 requirement). The LC₅₀ for acute inhalation toxicity in rats is 0.43 µg/L (Toxicity Category I, MRID No. 41976901. This study satisfies Guideline 81-3).

A primary eye irritation study in rabbits indicated that bromadiolone technical produced no irritation in washed eyes. Conjunctivitis and iritis were seen in the unwashed eyes for 4 days. No corneal opacity was seen in either the washed or unwashed eyes (Toxicity Category III, MRID No. 00088113. This study satisfies the Guideline 81-4).

A primary dermal irritation study in rabbits showed that, after 24 hours of dermal application, bromadiolone produced minimal irritation on the application site (Toxicity Category IV; MRID No. 00088112. This study satisfies Guideline 81-5).

A dermal sensitization study in guinea pig showed that bromadiolone was not a dermal sensitizer (MRID No. 41847401. This study satisfies Guideline 81-6).

(3) Bromethalin Acute Toxicity

Results of the acute toxicity studies conducted with technical bromethalin are summarized below in Table 8:

Table 8 - Acute Toxicity Values of Technical Bromethalin

Route	Species	Results	Toxicity Category	MRID
Oral	Rat	LD ₅₀ (Males) = 10.7 mg/kg LD ₅₀ (Females) = 9.1 mg/kg	I	00026524
Dermal	Rabbit	LD ₅₀ = 2000 mg/kg	II	00026524
Inhalation	Rat	LC ₅₀ = 0.024 mg/L	I	00026524
Eye Irritation ^a	Rabbit	Slight irritation	III	00026524
Skin Irritation ^a	Rabbit	Not an irritant	IV	00026524
Dermal Sensitization ^a	Guinea Pig	Non sensitizer	N/A	41653001

^aNot required for TGAI, however, presented here for informational purpose

An acute delayed neurotoxicity study was conducted in the hen. White rock strain hen (30 animals) were initially dosed with bromethalin in PEG-400 at 9 mg/kg and redosed on day 3 with 15 mg/kg. Observation was for 24 days. Bromethalin did not produce acute delayed neurotoxicity in the hen. (MRID 00101543).

An acute neurotoxicity study was conducted in rats. Male and female Sprague-Dawley CD rats were orally gavaged with bromethalin in mineral oil at doses of 0, 0.8, 1.5 or 3 mg/kg. The NOEL was greater than 3 mg/kg (HDT) and the LOEL was not determined in this study. Although this study was classified as unacceptable, the study can be upgraded if the registrant can provide the following data: the rationale of vehicle choice and volume used, the stability of test material in mineral oil, the rationale for choice of testing time on dosing day, and body temperature measurements. Body temperature is a measurement that should have been taken, given the mechanism of action of bromethalin (uncoupler of oxidative phosphorylation) (MRID 42793101). However, a new study will not be required since adequate information is available to determine an acute NOEL for bromethalin neurotoxicity.

(4) Chlorophacinone Acute Toxicity

Results of the acute toxicity studies conducted with technical chlorophacinone are summarized in Table 9:

Table 9 - Acute Toxicity Values of Technical Chlorophacinone

Route	Species	Results	Toxicity Category	MRID
Oral	Rat	LD ₅₀ (M) = 3.15 mg/kg LD ₅₀ (F) = 10.95 mg/kg combined = 6.26 mg/kg	I	41875301
Dermal	Rabbit	LD ₅₀ (M) = 0.329 mg/kg LD ₅₀ (F) = not done	I	41702801
Inhalation	Rat	LC ₅₀ (M) = 7 µg/L LC ₅₀ (F) = 12 µg/L	I	41981102
Eye Irritation ^a	Rabbit	No eye irritation at 1, 24, 48, or 72 hours.	IV	41874001
Skin Irritation ^a	Rabbit	PIS = 0, but mortalities occurred (same study as dermal LD ₅₀ assay)	IV	41702801
Dermal Sensitization ^{a,b}	Guinea Pig	Non sensitizer	N/A	41578601

^a Not required for TGAI, however, presented here for informational purposes.

^b 2/10 animals died

In an oral LD₅₀ study in which technical chlorophacinone (99.36% by potentiometry, 102% by UV spectrophotometry) was administered as a suspension in polyethylene glycol 300 to Sprague-Dawley rats, there were mortalities at all dose levels in males (2.0 mg/kg: 4/10; 3.2 mg/kg: 6/10; 5.2 mg/kg: 4/10; 8.2 mg/kg: 8/10; 13.2 mg/kg: 10/10; 21 mg/kg: 9/10). There were no mortalities in females receiving doses of 2.0 or 3.2 mg/kg, but mortalities occurred at higher dose levels (5.2 mg/kg: 2/10; 8.2 mg/kg: 3/10; 13.2 mg/kg: 6/10; 21 mg/kg: 9/10). Deaths, with symptoms consistent with internal hemorrhage or other evidence of anticoagulant activity, occurred on days 4-13 after dosage. The acute oral LD₅₀ for males was calculated as 3.15 mg/kg, with 95% confidence limits of 1.48-6.68 mg/kg. For females it was 10.95 mg/kg, with 95% confidence limits of 6.46-18.57 mg/kg. The combined oral LD₅₀ for both sexes was calculated as 6.26 mg/kg (95% confidence limits of 3.96 to 9.89 mg/kg). These results place technical chlorophacinone in Toxicity Category I (MRID 41875301) by the oral exposure route.

In a dermal LD₅₀ study with male New Zealand white rabbits chlorophacinone technical (100%) was dissolved in acetone and spread onto 2.0 x 2.0 cm pads. Each pad was allowed to dry before it was applied to a shaven dermal area on one of 10 male rabbits/dose level. Doses applied were 0.25, 0.5 or 0.75 mg/kg, with 24-hr occluded dermal exposure. Animals were observed for 21 days (instead of the usual 14 days) after exposure. Deaths occurred between days 5 and 19. Symptoms (which included bloody nasal discharge) and necropsy findings (hemorrhage in the thoracic cavity and large intestine) were consistent with anticoagulant activity. There were mortalities at each dose level (0.25 mg/kg: 4/10; 0.50 mg/kg: 6/10; 0.75 mg/kg: 9/10). There were no indications of skin irritation in any of the animals. The dermal LD₅₀ of chlorophacinone technical was calculated to be 0.329 mg/kg (95% confidence interval 0.21-0.52 mg/kg) for males. Females were not tested. This was because males had been previously observed to be more sensitive to the anticoagulant effects of chlorophacinone than females. With a dermal LD₅₀ below 200 mg/kg, technical chlorophacinone is in Toxicity Category I (MRID 41702801) by the dermal exposure route.

There were no indications of skin irritation from dermal exposure to technical chlorophacinone at doses which resulted in mortality (this is the dermal LD₅₀ study indicated above, in MRID 41702801). The test material is in toxicity category IV in terms of its dermal irritation potential.

In an inhalation LC₅₀ study in rats, groups of young adult Sprague-Dawley rats, 7-9/sex/exposure level, were exposed (nose only) for 4 hours to analytically-determined concentrations of 1.33, 10.3, 11.5 or 14.5 µg/L (the respective nominal values were 72.3, 88.63, 440 and 166 µg/L), with a subsequent 21-day observation. "To minimize human exposure, continuous observation of the animals during the 4-hour exposure was not maintained." Observations were made at 0.5, 1 and 2.5 hours during the exposure period. Between observations some animals turned in the restrainers and, as a result, died from suffocation. The deaths from suffocation were considered stress-related. All animals that died within the first 5 hours showed no clinical signs of hemorrhage. At the lowest concentration level (1.33 µg/L) there were no compound-related mortalities in 5 males and 7 females; but mortalities accompanied by signs of anticoagulant activity occurred on post-exposure days 3-8 in rats exposed to the higher concentrations (10.3 µg/L: 4/6 males, 2/8 females; 11.5 µg/L: 8/8 males, 5/6 females; 14.5 µg/L: 2/5 males and 3/6 females). The inhalation LC₅₀ for males = 7.00 µg/L, with 95% confidence limits (C.L.) of 0.83 - 59 µg/L. For females, the inhalation LC₅₀ = 12.0 µg/L, with 95% C.L. of 7.8 - 18 µg/L; and the combined LC₅₀ = 9.3 µg/L, with 95% C.L. of 2.3 - 38 µg/L. Chlorophacinone technical (analyzed concentration: 101%) is in Toxicity Category I (inhalation LC₅₀ at or below 50 µg/L) based on the LC₅₀ values in both sexes (MRID 41981102).

In an eye irritation study in rabbits, 0.1 g technical chlorophacinone (99.88%) was instilled in the conjunctival sac of the left eye in each of 6 female New Zealand white rabbits, with no subsequent eye wash. Eyes were scored at 1, 24, 48 and 72 hours after exposure, but there were no indications of any irritation (all scores zero). Technical chlorophacinone (99.88%) is in Toxicity Category IV in terms of eye irritation potential (MRID 41874001). It is noted that the rabbits were only observed for 72 hours following ocular exposure, and the possibility exists that if observations had been continued mortalities might have subsequently been noted.

A dermal sensitization study (MRID 41578601) of male Hartley strain guinea pigs with chlorophacinone technical (99.88%), using the Buehler procedure and a 3-week induction period with 2 inductions/week was conducted. A first attempt was made using a dosage level of 0.2 g/animal/induction, but after one induction there was 40% mortality in the test group. In a second attempt, 0.01 g/animal/induction was used as a dose level. Subsequently, the dosage amount was reduced to 0.005 g/animal/induction using new animals. This part of the study was also terminated "due to high mortality in the test group." The final assay attempt utilized a dosage level of 0.003 g/animal/induction. Dosing chambers were secured with hypoallergenic tape, and following each 6-hour exposure period, the application site was wiped to remove as much of the test material as possible. Even so, two animals died during the induction period (on days 8 and 13). There were no indications of dermal irritation at the application sites during either the induction phase or following challenge. This study adequately demonstrates that technical chlorophacinone is not a dermal sensitizer as a result of exposure to non-lethal doses.

(5) Diphacinone and its sodium salt Acute Toxicity

Results of the acute toxicity studies conducted with technical diphacinone are summarized below in Table 10:

Table 10 - Acute Toxicity Values of Technical Diphacinone

Route	Species	Results	Toxicity Category	MRID
Oral	Rat	LD ₅₀ (M) = 2.5 (1.32-3.44) mg/kg LD ₅₀ (F) = 2.1 (1.55-2.86) mg/kg combined = 2.3 (1.86-2.88) mg/kg	I	00060605
Oral	Rat	LD ₅₀ (M) = 6.8 mg/kg LD ₅₀ (F) = 8.0 mg/kg combined = 7.0 (5.2-9.5 mg/kg)	I	42245202
Dermal	Rabbit	LD ₅₀ (M) = 3.6 (0.6-20.8) mg/kg LD ₅₀ (F) = not done	I	42507001
Inhalation	Rat	LC ₅₀ (M) < 0.6 µg/L LC ₅₀ (F) < 0.6 µg/L	I	43000401
Eye Irritation	Rabbit	Moderate irritation clearing by day 4	III	42245203
Skin Irritation	Rabbit	Slight erythema clearing within 48 hours, but 4/6 rabbits died between days 8 and 10	IV	
Dermal Sensitization	Guinea Pig	neither a dermal irritant nor a sensitizer at a non-lethal dose level (2.5 mg/day)	N/A	42132501

In an oral LD₅₀ study (MRID 00060605) technical diphacinone (purity not specified), was administered as a suspension in corn oil (volumes of 10 mL/kg were administered at all dosage levels) to Spartan rats (5/sex/dose level), at dose levels of 0, 0.79, 1.25, 1.98, 3.15, 5.00, 7.94, 12.60, 20.01, 31.76, 50.40 or 201.7 mg/kg, with a subsequent 14-day observation. The following mortality pattern was observed as outlined in Table 11.

Table 11 - Dose Levels and Mortality in an Oral LD₅₀ Study with Diphacinone

Dose Level (mg/kg)	Males Deaths /Rats Dosed	Females Deaths /Rats Dosed	Combined Deaths /Rats Dosed	Days after dosage deaths occurred
0.79	0/5	0/5	0/10	-
1.25	0/5	1/5	1/10	6
1.98	2/5	1/5	3/10	4
3.15	3/5	5/5	8/10	3-7
5.00	5/5	5/5	10/10	3-6
7.94	5/5	5/5	10/10	3-7
12.60	5/5	5/5	10/10	4-6
20.01	5/5	4/5	9/10	3-8
31.76	5/5	5/5	10/10	4-9
50.40	5/5	5/5	10/10	3-7
201.70	5/5	5/5	10/10	3-6

Data extracted from tables 4, 5 and 6 of MRID 00060605

Symptoms occurred at all doses, and were not necessarily associated with subsequent mortality. These included clear or colored nasal discharge, soft stool and/or diarrhea (possibly associated with the corn oil vehicle used), decreased motor activity and occasional drying of the corneal surface. Symptoms at higher dose levels included lacrimation, ataxia, cyanosis and bloody exudate from nose and eyes. Hemorrhage into the body cavities and of various organs was observed in animals which died. The acute oral LD₅₀ for males was calculated as 2.50 mg/kg, with 95% confidence limits of 1.82-3.44 mg/kg. For females, it was 2.10 mg/kg, with 95% confidence limits of 1.55-2.86 mg/kg. The combined oral LD₅₀ for both sexes was calculated as 2.31 mg/kg (95% confidence limits of 1.86 to 2.88 mg/kg). These results place technical diphacinone in Toxicity Category I (MRID 00060605) by the oral exposure route. The study defines such a high degree of toxicity for technical diphacinone that the Agency can accept the findings, even in the absence of information as to the purity of the test material.

In a second oral LD₅₀ study (MRID 42245202), technical diphacinone (reported as having "at least 98% purity") was administered as a 0.2% w/w suspension in corn oil to groups of 5 rats/sex/dose level. The dose levels were 4, 6, 8 or 10 mg diphacinone/kg body weight, with observation for 14 days after dosage. Signs of toxicity included nasal staining (usually red), paleness, red staining on the tail. Most animals that survived (including 2/3 at the highest dose level) appeared healthy throughout the test period. Necropsy findings of animals which died during the 14-day observation period were consistent with anticoagulant activity (such as red fluid in the thoracic and/or abdominal cavities, apparent testicular hemorrhage). The acute oral LD₅₀ for males was calculated as 6.8 mg/kg, and for females 8 mg/kg. The combined oral LD₅₀ for both sexes was calculated as 7 mg/kg (95% confidence limits of 5.2 to 9.5 mg/kg). The results of this second oral LD₅₀ study (MRID 42245202) are reasonably consistent with those of the first (MRID 60605), as both define a Toxicity Category I hazard potential for technical diphacinone by the oral exposure route, although the second study indicates somewhat less toxicity (or perhaps the strain of rat used in the second study was less susceptible). See Table 12 below.

Table 12 - Dose Levels and Mortality in a Second Oral LD₅₀ Study with Diphacinone

Dose Level (mg/kg)	Males Deaths/Rats Dosed	Females Deaths/Rats Dosed	Combined Deaths/Rats Dosed	Days after dosage deaths occurred
4	1/5	1/5	2/10	5
6	3/5	3/5	6/10	3-9
8	3/5	1/5	4/10	3-7
10	4/5	3/5	7/10	3-7

Data extracted from tables 1, 2, 5, 8 and 11 of MRID 42245202

It is noted that the mouse is considerably less susceptible to the toxic effects of diphacinone than other mammalian species (see discussion in Mutagenicity section under MRID 42406801). The NIOSH Registry of Toxic Effects of Chemical Substances 1985-86 reports a mouse LD₅₀ for diphacinone as 300 mg/kg, and the rat LD₅₀ as 1.5 mg/kg. This is also supported by a report from the open literature (Correll et. al., 1952) which states that the acute oral LD₅₀ for diphacinone was found to be 3 mg/kg for rats, 340 mg/kg for mice, and 35 mg/kg for rabbits.

In a dermal LD₅₀ study (MRID 42507001) with male New Zealand white rabbits, diphacinone technical (97.4%) was dissolved in acetone and the appropriate amount of the test substance solution was applied to the foil side of Scotch Pak pads. The acetone was allowed to evaporate, and the Scotch Pak pad, test substance side down, was applied to the application site, with 24-hour occluded exposure. In a range-finding trial, dose levels of 0, 1, 5, 10, 25 or 50 mg/kg were administered to groups consisting of 1 animal/sex/dose level. The findings in this range-finding study were used to set the doses in the subsequent definitive study. Females at the three highest dose levels - 10, 25, or 50 mg/kg - died. Those at the two lower dose levels - 1 and 5 mg/kg - survived. Deaths occurred on days 7-13. Males at all dose levels died. The performing laboratory suggested that only male rabbits should be used for the LD₅₀ determination, as they had been the more sensitive sex. The doses for the dermal LD₅₀ determination were 0.05, 0.20 and 0.80 mg/kg, with subsequent 21-day observation. The following mortality pattern was observed as outlined in Table 13.

Table 13 - Dose Levels and Mortality in a Dermal LD₅₀ Study with Diphacinone

Dose Level (mg/kg)	Males Deaths/Rabbits Dosed	Days after dosage deaths occurred
0.05	0/10	-
0.20	1/10	4
0.80	2/10	4

Data extracted from tables IIA, IIB and IIC of MRID 42507001

The animals that died (both in the preliminary range-finding and subsequent LD₅₀ determination studies), showed symptoms (hemorrhage, discoloration of various organs) indicative of anticoagulant activity. No clinical signs were observed at the lowest dose level (0.05 mg/kg). Symptoms at the two higher dose levels included somnolence, loss of fluids, absence of feces and vasoconstriction. Based on the mortality, the estimated dermal LD₅₀ in male rabbits is 3.6 mg/kg. These results place technical diphacinone in Toxicity Category I (MRID 42507001) by the dermal exposure route.

In an inhalation LC₅₀ study in rats (MRID 43000401), a group of young adult Sprague-Dawley rats, 5 of each sex, were exposed (whole body) for 4 hours to a time-weighted average aerosol concentration (gravimetrically determined) of 6 µg/L, with subsequent 14-day observation. The mass median aerodynamic diameter was 2.3 µm, with a geometric standard deviation of ±2.1 µm. The percentage of particles ≤ 4.0 µm was equal to 78%. Mortality occurred (days 4-8) in 5/5 males and 4/5 females. Symptoms (including red staining of abdominal and urogenital regions, reddish material around ears and in cage tray) and necropsy findings (hemorrhage in the thoracic cavity and/or cranial cavity and/or various organs) were consistent with anticoagulant activity. The dose in the LC₅₀ study was based on findings in a preliminary range-finding study, in which groups of one rat/sex/exposure level were exposed for one-hour to concentrations of 0, 0.01, 0.11, or 1.1 mg/L, with subsequent 7-day observation. All the males died (deaths occurred days 4-7), as did the female exposed to the lowest concentration (0.01 mg/L). However, the two females exposed to the two higher concentrations (0.11 and 1.1 mg/L) showed an array of symptoms (decreased activity, labored breathing, distended abdomen) on day 7 similar to those observed in other rats in the day or so before they died. These females underwent scheduled euthanasia. Diphacinone technical (percentage active ingredient not reported) is in Toxicity Category I (inhalation LC₅₀ at or below 50 µg/L) based on the LC₅₀ value of less than 6 µg/L in both sexes (MRID 43000401).

In an eye irritation study with New Zealand white rabbits (MRID 42245203), an attempt was made to place as much technical diphacinone (with at least 98% active ingredient) as possible into the conjunctival sac of one eye of each of nine rabbits. The report notes that the test material at 0.1 g exceeded the capacity of the rabbits' eye. The treated eyes of 3 rabbits were irrigated approximately 20-30 seconds after instillation of the test material. The eyes of the remaining 6 rabbits were not washed. No corneal opacity was observed, although some eyes showed iritis, and all eyes (washed and unwashed) showed some conjunctival irritation, with clearing by day 4. Technical diphacinone is in Toxicity Category III in terms of eye irritation potential (MRID 42245203). It is noted that the rabbits were only observed for 96 hours following ocular exposure, and the possibility exists that if observations had been continued mortalities might have subsequently been noted.

In a dermal irritation study with New Zealand white rabbits, 0.5 g of undiluted technical diphacinone (with at least 98% active ingredient) was applied to a single intact site, with 4-hour occluded exposure. Barely perceptible erythema was observed at 2 treated sites one hour after patch removal and at one treated site at 24 hours, with no evidence of erythema at 48 or 72 hours. No occurrence of edema was observed. The Primary Dermal Irritation Score was reported to be 0.09. Technical diphacinone (at least 98% active ingredient) is in Toxicity Category IV in terms of its primary dermal irritation potential. However, the report also notes "There were no signs of gross toxicity, adverse pharmacological effects or abnormal behavior during the test period. However, it should be noted that 4 of 6 rabbits died after the last scoring interval (i.e. between days 8 and 10 post-dosing). These spontaneous deaths may have been due to the anticoagulant properties of the test product."

In a dermal sensitization study (MRID 42132501) with Hartley albino male guinea pigs with diphacinone technical (96.57%), the test material was administered as a topical application

at various dose concentrations. The test article was kept in contact with the skin surface for a six hour period. After the initial exposure, the test article was administered on alternate days three days a week such that each animal received 10 sensitizing treatments. Following the tenth treatment, animals were rested for two weeks, and then given an eleventh (challenge) dose.

The major problem in this dermal sensitization study was on determining a non-lethal dose level. In the initial assay application of 500 mg caused death and/or severe hemorrhage from the external nares in some animals and evident discomfort in others, with the result that all surviving animals were euthanized. Further testing at doses of 5, 10, 20, 40 or 80 mg with two male guinea pigs/dose resulted in all animals either dying or being euthanized on or about the seventh day after the initial dose. Additional dosing at 0.1, 0.5, 1.0 or 2.5 mg with two animals/dose resulted in the death of one animal in the 0.5 mg group. As a result, the final dose selected was 2.5 mg in 10 guinea pigs (one of these animals died 13 days after the initial dose). Signs of dermal irritation were not observed in any of the guinea pigs at any dose level during the study, and there were no indications of any sensitization reaction in the survivors of the final assay (dose level: 2.5 mg/animal). There were 3 guinea pigs in a positive control group (each received 2.5 mg/application). One of these positive control animals died before the challenge application, but positive responses were elicited in the remaining 2 guinea pigs. The findings of this study (MRID 42132501) adequately demonstrate that technical diphacinone at a non-lethal exposure level is neither a dermal irritant nor a sensitizer.

b. Subchronic Toxicity

(1) Brodifacoum Subchronic Toxicity

The Agency has no record that any subchronic toxicity studies on brodifacoum have been received and/or reviewed. However, it is noted that there are a number of multiple-dose studies which the Agency has received (including a special study Brodifacoum: Blood Kinetics Study in the Pregnant Rat, MRID 42641902, see below), which include prothrombin time measurements, which appears to be the most sensitive indicator of toxicity for the anticoagulants.

Although the current toxicological data base is sufficient for the purposes of this RED, because of the potential for non-purposeful dermal exposure, and to more accurately assess the margins of exposure associated with potential incidental exposure, a 21-day dermal toxicity study (Guideline 82-2) is required as confirmatory data. Such a study must include prothrombin and activated partial thromboplastin time measurements, including pre-exposure, as well as on days 7, 14 and 21 of exposure.

(2) Bromadiolone Subchronic Toxicity

In a 90-day study, groups of beagle dogs (4/sex/dose) received bromadiolone in gelatin capsules at variable daily doses for different lengths of time. The dosages were low-dose, 5/10 µg/kg; mid-dose, 10/15/20 µg/kg; and high-dose, 15/25/50/100 µg/kg. The control dogs received starch in gelatin capsules. The high-dose animals died or were sacrificed moribund prior

to the study's termination. In addition, the high-dose animals also showed signs of loose, bloody stools following the 15 µg/kg dosing. After five days of following 100 µg/kg dosing high-dose animals also showed signs of hypothermia, respiratory difficulties, pale mucosa, drowsiness, atonia, bloody urine, hematomas, and external hemorrhage. Both mid- and high-dose dogs had increased prothrombin time and hematuria. Histological examination showed that in high-dose groups, 4/4 male or female dogs had hemorrhage, congestion and/or edema of the spleen, kidneys, lungs, urinary bladder, small intestine, liver, thyroid, and skin. No compound-related histological lesions were found in mid- and low-dose dogs. Based upon the clinical and hematological findings, the LOEL for subchronic toxicity of bromadiolone was 15 µg/kg; NOEL, 10 µg/kg (MRID 92196013).

In a multiple-dose toxicity study, groups of female rats (10/dose) received bromadiolone (technical grade) by gavage at doses of 6.4, 12.4, or 24.8 µg/kg for 20 days. By study day 13, the mid- and high-dose rats were all dead, and 8/10 rats in the 6.4 µg/kg group were also dead by day 20. The clinical signs included hemorrhage in the orbital sinus, nasal cavity, and nail beds, anorexia, and polydipsia. At necropsy, the dead rats showed general internal bleeding and hemorrhagic spots in liver, intestinal tract, and kidneys. No NOEL for subchronic toxicity could be established for bromadiolone (MRID 00107035).

The above two studies are classified as supplementary and do not meet the data requirements for a subchronic toxicity study in dogs and rats (Guideline No. 82-1). However, when the data from the 90-day dog study and the 20-day rat study are analyzed together with the results from rat and rabbit developmental toxicity studies, the results provided sufficient information for the understanding of the subchronic toxicity of bromadiolone. Additional subchronic toxicity tests would probably not yield much more new information. Therefore, a new subchronic toxicity study in either the rat or dog is not requested at this time.

(3) Bromethalin Subchronic Toxicity

Sprague Dawley rats (10/sex/group) received daily gavage doses of 0 (25% polyethylene glycol in H₂O), 5, 25, or 125 micrograms/kg/day (ug/kg/day) of bromethalin technical for 13 weeks. Parameters evaluated included daily observation, weekly body weight and food consumption, ophthalmoscopy, clinical pathology, necropsy, organ weights, and histopathology. The NOEL is 25 µg/kg/day. The LOEL is 125 µg/kg/day, based on spongy degeneration (leukoencephalomyelopathy) observed in most of the central white fiber tracts of the brain, cerebellum, pons, brain stem, and thoracic spinal cord of both sexes and optic nerves of males. There were no effects on mortality, clinical chemistry, ophthalmoscopy, body weight, food consumption, clinical pathology and histopathology of other tissues (MRID 43582102).

In a second 90-day study, groups of 4 male and 4 female beagle dogs were orally dosed by gavage for 90 days at levels of 0, 5, 25, 125, or 200 ug/kg/day with bromethalin technical. Observations included daily clinical evaluations, ophthalmoscopy, body weight, food consumption, clinical pathology evaluations at weeks 6 and 13, necropsy, organ weights and histopathology. The NOEL is 25 µg/kg/day. The LOEL is 125 µg/kg/day based on spongy

degeneration observed in nervous tissue components (cervical, thoracic, and lumbar spinal cord, brain stem, right and left optic nerves, frontal and median brain, pons, and cerebellum) in both sexes of dogs. At the high dose, 3 male dogs displayed the following neurotoxic signs before death or being sacrificed moribund: salivation and hypoactivity, followed by trembling, myoclonia, hyperesthesia, groaning, and decubitus. Other measured parameters were considered comparable between control and treated dogs of both sexes (MRID 43582101).

The above two subchronic toxicity studies in rats and beagle dogs are not guideline-type subchronic neurotoxicity studies. However, these studies will satisfy the data requirements for a 90-day neurotoxicity screening battery because a NOEL and a LOEL was established in both studies.

(4) Chlorophacinone Subchronic Toxicity

In a subchronic study (MRID 92018013), groups of 10 Sprague-Dawley rats/sex/dose were gavaged at 0, 10, 20 or 40 µg/kg 7 days/week for 113 days. A group was also dosed at 5 µg/kg/day, but was terminated at 77 days due to lack of evident toxicity. Additional groups were tested at 80 and 160 µg/kg, but all animals died between days 3 and 13. At 40 µg/kg/day deaths occurred in 10/10 males (mortalities occurred days 29-82) and 4/10 females (days 69-111); 4/10 males (but 0/10 females) died at 20 µg/kg/day (deaths occurred on days 105-111). "The dominant clinical signs that were responsible for death of animals were related to the anticoagulant activity of chlorophacinone." Although 1/10 males and 1/10 females died in the 10 µg/kg/day group, these deaths were ascribed to intubation error. At termination (112-113 days), hematology (including "coagulation time") and clinical chemistry parameters were determined from the 0, 10, 20 or 40 µg/kg/day groups (but not the 5 µg/kg/day group, which was terminated at 77 days). In the 10 µg/kg/day animals, males showed a 28% increase ($p < 0.01$) in coagulation time, while females showed a 6% increase ($p < 0.05$); at 20 µg/kg/day males showed a $> 100\%$ increase ($p < 0.01$) in coagulation time and females an 11% increase ($p < 0.05$); at 40 µg/kg/day females showed a $> 100\%$ increase.

The FIFRA 88 Phase 2 and 4 Data requirements for all anticoagulant rodenticides included a generic data request for a 14-day feeding study in the rat to determine a NOEL and LOEL for signs of toxicity and coagulation parameters. This information was requested to more adequately define and evaluate the effects that would result from accidental ingestion of this type of rodenticide. While MRID 92018013 does not adequately satisfy the Guideline requirements for a 90-day feeding or gavage study (Guideline 82-1), sufficient information is provided to satisfy the generic data request for a 14-day feeding study.

At the 5 µg/kg/day dose level there was no mortality or signs of toxicity during the 77-day exposure period. Coagulation values were not evaluated at this dose level. However clotting times were increased by 28% and 6% for males and females, respectively, at the 10 µg/kg/day levels at termination (113 days). Based on these findings, HED considers 5 µg/kg/day as a NOEL in a subchronic oral study, with a LOEL of 10 µg/kg/day (increased coagulation times for both males and females, with males more sensitive than females).

In a 21-day dermal toxicity study (MRID 42237402), a formulated product (tracking powder) containing 0.2% chlorophacinone was applied dermally with 6 hr occluded exposure/day, 5 days/week at 0.08, 0.40 or 2.0 mg/kg (these doses are in terms of the active ingredient, chlorophacinone) to 5 rabbits/sex/dose. The 0.2% product was used instead of the technical material because of difficulties (encountered in a preliminary range-finding study) in accurately weighing out and working with small quantities of this highly toxic compound. At 2 mg/kg/day, there was mortality (with "widespread" internal hemorrhage) in 4/5 males (deaths occurred on days 14-18) and 1/5 females (one death occurred on day 21). Prothrombin (PT) times were markedly increased on day 21 in surviving animals (the one male had a PT time of 9.0 seconds, while controls had a mean of 6.0. The females had a mean PT time of 17.7 seconds, as compared to a control mean of 5.9). Moderate to severe centrilobular liver necrosis was observed in 3/5 males and 1/5 females. There was no mortality at 0.4 mg/kg, but prothrombin times were markedly increased on day 21 (males: 7.7 vs. a control value of 6.0 seconds; females: 9.5 vs. a control value of 5.9). There were no indications of any effect at 0.08 mg/kg/day.

The following table from the report (in MRID 42237402) summarizes the measurements for prothrombin time (PT) and activated partial thromboplastin time in seconds (APTT):

Table 14 - Prothrombin and Activated Partial Thromboplastin Times in a 21-Day Subacute Dermal Study in Rabbits - Statistically Significant Findings

		Hematology Data - PT/APTT Mean Values							
Sex		Males				Females			
Parameter		Group 1	Group 2	Group 3	Group 4	Group 1	Group 2	Group 3	Group 4
Dosage (mg/kg/day)		0	0.08	0.4	2.0	0	0.08	0.4	2.0
		Prothrombin time (PT) in seconds							
Pretreatment	Week -2	6.4	6.4	6.4	6.4	6.3	6.1	6.3	6.4
	Week -1	6.3	6.3	6.3	6.2	6.2	6.1	6.3	6.4
	Week - 0	6.6	6.3	6.3	6.3	6.4	6.3	6.2	6.5
Termination	Week - 0	6.0	6.0	7.7	9.0	5.9 ^a	6.4 ^b	9.5 ^c	17.7 ^c
		Activated partial thromboplastin time (APTT) in seconds							
	Week -3	32.5	32.4	52.3	24.5	22.9	28.3	59.7 ^c	67.0 ^c

^aExamination of the female animals in the concurrent control, for the Week 3 interval, showed a statistically significant decrease based on their own three pretreatment values. This slight decrease in the control female value gave rise to the statistical significance in the Group 2 female value.

^bAnalysis of variance indicated a significant difference from the control value, $p \leq 0.05$; further statistical analyses, using repeated measures analysis of variance and dependent measures t-test procedures, indicated that this value did not vary significantly from the mean prothrombin time recorded at pretreatment intervals for those animals.

^cSignificantly increased, $p \leq 0.05$

The subchronic dermal LOEL is 0.4 mg/kg/day, based on increased prothrombin times in both sexes on day 21. The subchronic dermal NOEL is 0.08 mg/kg/day.

This subchronic dermal study in the rabbit is classified as acceptable (Guideline), and satisfies the guideline requirement for a subchronic dermal toxicity study (§82-2).

(5) Diphacinone and its sodium salt Subchronic Toxicity

In a 21-day dermal toxicity study (MRID 00074637), diphacinone (99.8%, moistened with 0.9% physiological saline) was applied (6-hr occluded exposure) five days a week for three weeks, at dosage levels of 0, 0.1, 1.0 or 10.0 mg/kg to groups consisting of four male and four female New Zealand white rabbits/dose level. The skin of two males and two females in each group was abraded. The skin of the remaining rabbits was left intact. Most of the animals exposed to diphacinone showed no dermal irritation. The dermal irritation which did occur in 1 or 2 animals/group was slight. However, all of the animals exhibited yellow staining of the test site after a few exposures.

Mortalities or sacrifice *in extremis* occurred in 1/8 controls, 1/8 in the 0.1 mg/kg/day group, 5/8 at 1.0 mg/kg/day, and 6/8 at 10.0 mg/kg/day. Symptoms included clear nasal discharge, pale skin and/or mucous membranes, and hypothermia. On gross pathology, "hemorrhagic areas in different sites were present in the stomach, mouth, ear, muscle, soft tissues, thoracic and abdominal cavities, cecum, colon, kidney and bladder of some animals. These lesions were more frequent in the 1.0 mg/kg and 10.0 mg/kg Diphacinone groups, only one case was present in the control group and one in the 0.1 mg/kg Diphacinone group." Blood samples were taken at preexposure, and on day 19. Determinations included hematocrit, hemoglobin, erythrocyte count, total leucocyte count, platelets, mean corpuscular volume, mean corpuscular hemoglobin and mean corpuscular hemoglobin concentration. However, there were no measurements of clotting time.

Finally, while this 21-day dermal toxicity study (MRID 00074637) is classified as acceptable (satisfying the guideline requirement for a subchronic dermal toxicity study §82-2), with a subchronic dermal NOEL of 0.1 mg/kg/day, and a subchronic dermal LOEL of 1.0 mg/kg/day (based on mortality accompanied by indications of anticoagulant activity), it is noted that there are indications in the report of possible anticoagulant activity ("hemorrhagic areas") in one control and one 0.1 mg/kg rabbit. In addition, there were no clotting time determinations (such as prothrombin and/or activated partial thromboplastin times).

In a 21-day subchronic study (MRID 00077319), groups of 2 Swiss Webster mice/sex/dose level were intubated (using a 10 mg/mL solution of technical diphacinone in propylene glycol) at 0.1, 0.5, 1.0, 2.5, 5.0, 10.0 or 20.0 mg/kg/day for 20 days. All the mice dosed at 5, 10 or 20 mg/kg/day died during the first 7 days of the test period, and symptoms (bleeding, paleness) were generally consistent with anticoagulant activity. Three out of 4 intubated at 2.5 mg/kg died by day 14 (with symptoms of bleeding) with only one female surviving to termination. While there were no mortalities at 1.0 mg/kg, hemorrhages, sub-cutaneous accumulation of blood or external bleeding was noted at this dose level. No effects were observed at 0.5 mg/kg/day.

The observations in this study were subsequently used to set the dose levels (0, 0.1, 0.5, 1.0 or 2.5 mg/kg) in a mouse developmental toxicity study (also in MRID 00077319), which utilized 15 pregnant females/dose level. All animals dosed at 2.5 mg/kg/day died (days 4-10 of dosing). There was a considerable proportion of the fetuses in each female of this group

undergoing resorption (6/10, 4/10, 7/12, 3/11, and 4/12). At 1.0 mg/kg/day one pregnant female died on day 10 (2/10 fetuses were being resorbed). The LOEL in the 20-day feeding study is 1.0 mg/kg/day (occurrence of subcutaneous accumulation of blood, hemorrhages and external bleeding, with no mortalities), although no measurements were made for clotting time. While the single-dose LD₅₀ for the mouse is about 300 mg/kg, the toxicity of diphacinone in this species is enhanced when administration takes place over a period of several days.

At the 0.5 mg/kg/day dose level there was no mortality or signs of toxicity during the 20-day exposure period, and no mortalities (or other effects) were observed at this dose level in the subsequently conducted mouse developmental toxicity study. The LOEL is 1.0 mg/kg/day (based on the occurrence of subcutaneous accumulation of blood, hemorrhages and external bleeding, with no mortalities in the initial 20-day study, and the occurrence of mortality in 1/5 pregnant females at this dose level in the subsequently conducted mouse developmental toxicity study). It is noted that no information is given in this study as to clotting times. While the information in MRID 00077319 is useful, it is not adequate to satisfy the FIFRA 88 Phase 2 and 4 data requirements for anticoagulant rodenticides for a 14-day feeding study in the rat to determine a NOEL and LOEL for signs of toxicity.

In a single dose toxicity study (MRID 43260702), male and female Sprague-Dawley rats (5/sex) received technical diphacinone (99.0%) as a single oral gavage dose in corn oil at doses of 0, 0.13, 0.20, 1.0 or 2.5 mg/kg. In a 14-day oral toxicity study (MRID 43260701) groups of 5 rats/sex/dose received technical diphacinone (99.0%) by oral gavage in corn oil once a day for 14 days at doses of 0, 0.025, 0.040, 0.085 or 0.175 mg/kg/day. The purpose of these experiments were to demonstrate a NOEL and LOEL for overt signs of toxicity, lethality, and anticoagulant effects in young adult Sprague-Dawley rats following single and repeated dosage with technical diphacinone. Following single doses at up to 2.5 mg/kg (HDT), there were no overt clinical signs of toxicity. Following repeated dosing, there were no signs of toxicity at the 0.025, 0.040 or 0.085 mg/kg/day dose levels. At the 0.175 mg/kg/day dose level, there were increased incidences of dyspnea, lethargy, hemorrhage from the nose, ptialism, and few feces. At this dose level 3/5 males died (2/5 were found dead and one was sacrificed *in extremis*). All of the female rats in this dose group had died by day 11. The following Prothrombin (PT) and Activated Partial Thromboplastin Times (APTT) were observed as outlined in Tables 15, 16, 17 and 18.

Table 15 - Prothrombin Time in Seconds in Rats Following a Single Dose of Diphacinone^a

	Prothrombin Time in Seconds				
Diphacinone (mg/kg)	0	0.13	0.20	1.00	2.50
Males - 24 hrs after dosing	15.5 ± 0.9	15.1 ± 0.5	15.2 ± 0.2	56.6 ± 9.2	70.7 ± 8.1
Males - 96 hrs after dosing	14.0 ± 0.3	14.5 ± 0.3	14.3 ± 0.5	14.3 ± 0.3	22.9 ± 16.6
Females - 24 hrs after dosing	15.1 ± 0.3	14.8 ± 0.4	15.6 ± 0.5	30.9 ± 6.6	51.8 ± 14.9
Females - 96 hrs after dosing	14.4 ± 0.2	14.6 ± 0.4	14.4 ± 0.3	14.0 ± 0.3	15.1 ± 0.9

^aData taken from pages 51-58 of the report (MRID 43260702)

Table 16 - Activated Partial Thromboplastin Time in Seconds in Rats Following a Single Dose of Diphacinone^a

	Activated Partial Prothrombin Time in Seconds				
Diphacinone (mg/kg)	0	0.13	0.20	1.00	2.50
Males - 24 hrs after dosing	24.5 ± 2.6	22.1 ± 3.5	24.0 ± 1.3	49.8 ± 18.3	42.2 ± 5.3
Males - 96 hrs after dosing	21.7 ± 3.1	21.2 ± 2.7	19.4 ± 2.8	21.1 ± 1.7	30.3 ± 11.0
Females - 24 hrs after dosing	20.3 ± 1.6	19.3 ± 1.1	32.1 ± 6.6	39.6 ± 3.6	33.9 ± 7.8
Females - 96 hrs after dosing	21.4 ± 3.9	19.8 ± 2.0	18.4 ± 0.5	20.6 ± 1.7	29.3 ± 4.5

^aData taken from pages 51-58 of the report (MRID 43260702)

Table 17 - Prothrombin Time in Seconds in Rats Following Repeated Doses of Diphacinone^a

	Prothrombin Time in Seconds				
Diphacinone (mg/kg/day)	0	0.025	0.040	0.085	0.175
Males - 24 hrs after last dose	14.0 ± 0.2	14.2 ± 0.2	14.4 ± 0.2	15.2 ± 0.7	20.0 ± 1.3
Males - 96 hrs after last dose	14.4 ± 0.4	14.4 ± 0.3	14.0 ± 0.7	14.1 ± 0.4	14.3 ± 0.4
Females - 24 hrs after last dose	14.3 ± 0.3	14.6 ± 0.3	14.4 ± 0.2	14.4 ± 0.3	--b
Females - 96 hrs after last dose	14.4 ± 0.8	14.6 ± 0.3	14.3 ± 0.4	14.7 ± 0.1	--b

^aData taken from pages 51-58 of the report (MRID 43260702)

^bAll animals were dead by day 11

Table 18 - Activated Partial Thromboplastin Time in Seconds in Rats Following Repeated Doses of Diphacinone^a

	Activated Partial Thromboplastin Time in Seconds				
Diphacinone (mg/kg/day)	0	0.025	0.040	0.085	0.175
Males - 24 hrs after last dose	20.2 ± 1.1	20.0 ± 1.2	22.0 ± 1.2	25.9 ± 2.1	38.3 ± 11.0
Males - 96 hrs after last dose	20.4 ± 2.0	20.3 ± 1.0	19.9 ± 1.0	19.9 ± 0.9	19.7 ± 0.7
Females - 24 hrs after last dose	20.7 ± 1.9	19.7 ± 0.8	20.6 ± 0.7	24.4 ± 2.1	--b
Females - 96 hrs after last dose	21.4 ± 2.9	20.2 ± 0.9	20.2 ± 0.5	20.0 ± 0.9	--b

^aData taken from pages 51-58 of the report (MRID 43260702)

^bAll animals were dead by day 11

The LOEL from single dose administration is 0.20 mg/kg, based on increased activated partial thromboplastin time in female rats. The NOEL from single dose administration is 0.13 mg/kg. The LOEL from repeated dose administration is 0.085 mg/kg/day, based on increased prothrombin and activated partial thromboplastin times in male and female rats. The NOEL from repeated dose administration is 0.040 mg/kg/day. The information in MRIDs 43260701 and 43260702 satisfies the FIFRA 88 Phase 4 Data requirements to determine effects in the rat (and defining the NOELs and LOELs for signs of toxicity and coagulation parameters) following a single dose and following repeated oral dosage over a 14-day period.

c. Chronic toxicity

Given the exclusively non-food uses of these chemicals, no chronic studies were required.

d. Carcinogenicity

Given the exclusively non-food uses of these chemicals, no carcinogenicity studies were required.

e. Developmental Toxicity

(1) Brodifacoum Developmental Toxicity

In a developmental toxicity study (MRID 00052443, along with additional data in MRID 40307202), brodifacoum (92.5%) was administered to 30 Alderley Park, Wistar-derived mated female rats/dose level by gavage in 10% v/v ethanol:water at dose levels of 0 (vehicle only), 0.001, 0.01 or 0.02 mg/kg/day from days 6 through 15 of gestation. There was blood in the uteri of one 0.01 and three 0.02 mg/kg females. This was considered to be possibly related to the administration of brodifacoum. There were no indications of any dose-related developmental effects associated with exposure to brodifacoum at doses up to and including 0.02 mg/kg/day. The dose level of 0.02 mg/kg/day is considered adequate, based on the occurrence of 100% mortality at a nominal value of 0.05 (analytical value of 0.35) mg/kg/day in a preliminary study, and blood measurements in a special study (Brodifacoum: Blood Kinetics Study in the Pregnant Rat, MRID 42641902, see below).

The rat maternal toxicity NOEL is 0.001 mg brodifacoum/kg/day (based on the equivocal finding of blood in the uteri of one 0.01 and three 0.02 mg/kg females).

The rat developmental NOEL is 0.02 mg brodifacoum/kg/day (HDT). This developmental toxicity study in the rat is classified as acceptable (Guideline) (83-3a), and satisfies the guideline requirement for a developmental toxicity study in the rat.

In a special study (MRID 42641902), mixtures of unlabeled brodifacoum (98.7%) and radiolabeled brodifacoum (radiochemical purity > 95%) were administered to Alderley Park, Wistar-derived mated female rats by gavage at nominal doses of 0.0125 mg/kg (Group A: 24 rats, starting on day 1 of gestation, with sacrifice by exsanguination of 3 rats on days 1, 3, 5, 7, 9, 11, 13, 16) or 0.02 mg/kg (Group B: 15 rats, starting on day 7, with sacrifice of 3 rats on days 7, 9, 11, 13 and 16). The test material was administered as a suspension in polyethylene glycol 600. Terminal blood samples were analyzed for brodifacoum levels.

The following mean nanogram (ng.) equivalents of brodifacoum/gram of maternal blood were observed:

Group A (0.0125 mg/kg/day, days 0-16): day 1: 0.560; day 3: 0.924; day 5: 1.556; day 7: 1.809; day 9: 2.015; day 11: 2.795; day 13: 2.168; day 16: 3.396.

Group B (0.02 mg/kg/day, days 7-16): day 7: 0.691; day 9: 1.362; day 11: 3.087; day 13: 2.427; day 16: 4.488.

The relative proportions of mean blood brodifacoum levels in group B rats as compared to group A rats were the following: Day 7: 0.382; Day 9: 0.666; Day 11: 1.10; Day 13: 1.12; and Day 16: 1.32.

This study showed a steady increase of blood brodifacoum levels with continued dosage of both 0.0125 mg/kg/day and 0.02 mg/kg/day, consistent with findings of a previously reviewed metabolism study (MRID 00080235). In that study, three rats were given a single oral dose of 0.25 mg labeled brodifacoum and retained a mean of 77.73% of the initial dose (mean total label recovery was 91.51%) after 10 days. The combination of high toxicity and body accumulation of brodifacoum would have eventually resulted in mortalities at these dosage levels at some time after 16 days. The study is classified as acceptable (Non-guideline) as it is not a required guideline study. It is acceptable for the purposes for which it was intended as a special study, and the findings adequately justify the dosing schedule and doses used in the rat developmental toxicity study (MRID 00052443 and 40307202; summarization in MRID 92195013).

In a developmental toxicity study in rabbits (MRIDs 00052442 and 40307201), brodifacoum (92.5%) was administered to 15 mated female Dutch rabbits/dose level by gavage in 5% v/v ethanol:water at dose levels of 0 (0.5% v/v aqueous Tween 80), 0 (5% v/v aqueous ethanol, the vehicle used with brodifacoum), 0.001, 0.002 or 0.005 mg brodifacoum/kg/day from days 6 through 18 of gestation. Ten of the 15 rabbits receiving 0.005 mg/kg/day died or were humanely euthanized. All were found to have internal hemorrhage. Nine of these does had loss of blood (in some cases heavy) from the vagina. All of the implants of one doe (#47; euthanized on day 16) in the 0.005 mg/kg/day group are reported to have had a hemorrhagic appearance, but otherwise there were no indications of any dose-related developmental or toxic effects associated with exposure to brodifacoum at doses up to and including 0.005 mg/kg/day. Because only three litters (and only 20 fetuses) were available from the 0.005 mg/kg/day group at 29 days (and taking into consideration the hemorrhagic appearance of the implants of #46), the NOEL for fetal toxicity is 0.002 mg/kg/day, and the LOEL is 0.005 mg/kg/day. The only possible indication of toxicity in the 0.002 mg/kg/day does was the occurrence of a small hemorrhage beneath the lid of one eye on gestation day 14 in one rabbit (#44) which was not pregnant, but a similar finding was not reported for the 0.005 mg/kg/day females. In addition, the prothrombin time was significantly increased at 0.005 mg/kg/day on day 20 relative to controls (to 26.5 [seconds?] from 14.5) in a preliminary range-finding study. The following table shows the prothrombin time measurements (presumably in seconds) on day 20 in a preliminary range-finding study.

Table 19 - Prothrombin Time in the Preliminary Developmental Toxicity Range-Finding Study in the Rabbit (Day 20)*

	Control	0.001 mg/kg/day	0.005 mg/kg/day
Mean	14.5	17.4	26.5**
SD	2.0	-	5.1
No. of samples	4	1	3

** Statistically significant at the 1% level (Student's t-test) compared with the control group

*Data extracted from appendix 1 of MRID 00052442 (p. 31)

The rabbit maternal NOEL is 0.002 mg brodifacoum/kg/day. The LOEL is 0.005 mg/kg/day (based on 75% mortality associated with hemorrhage in pregnant females at this dose level). The developmental toxicity NOEL is 0.002 mg/kg/day, as only 3 litters (with a total of 20 fetuses) were available for evaluation at 0.005 mg/kg/day). It is reported that all of the implants from a 0.005 mg/kg/day doe which was euthanized on day 16 had a hemorrhagic appearance. This developmental toxicity study in rabbits is classified as acceptable (Guideline 83-3b).

(2) Bromadiolone Developmental Toxicity

Groups of pregnant Sprague-Dawley rats received bromadiolone (technical grade) in aqueous vehicle by gavage from gestation days (gd) 6 through 16 at doses of 0, 17.5, 35, and 70 µg/kg bw/day. There was an increase in the incidence of vaginal bleeding, hypotonicity, pale eyes, and deaths in 70 µg/kg dams. None of the above findings were seen in the controls or the two lower dose groups. No developmental toxicity was found in the test animals. The NOEL for developmental toxicity was 70 µg/kg (HDT). Based on the increased incidence of vaginal bleeding, hypotonicity, pale eyes, and deaths, the LOEL for maternal toxicity was 70 µg/kg. The NOEL was 35 µg/kg. This study satisfies the data requirements for a developmental toxicity study in rats (Guideline No. 83-3(a); MRID No. 92196014).

Groups of artificially inseminated New Zealand White rabbits received bromadiolone (99.8% purity) in aqueous media by gavage from gestation days (gd) 6 through 18 at doses of 0, 2, 4, and 8 µg/kg bw/day. Vaginal bleeding was found in 8/19 does of the 8 µg/kg group, in 1/19 does of the 2 µg/kg group, and none in the 4 µg/kg group and the controls. Since bromadiolone is an anticoagulant, the vaginal bleeding seen in the 2 µg/kg group could be conservatively considered as a compound-related effect in spite of the lack of a dose-related response. The prothrombin times of the highest dose group and the controls were comparable at sacrifice (11 days after dosing). This result was consistent with that seen in an antidote study where bromadiolone (up to 5.6 mg/kg bw) did not affect the prothrombin times of rats which received bromadiolone in the diet 2 weeks prior to the prothrombin time measurement (Tox. Document No. 009423; MRID No. 420933-01). Under the conditions of this study, conservatively, the incidence of vaginal bleeding seen in the lowest dose group (2 µg/kg) was considered as a threshold effect. The Peer Review/RfD Committee had analyzed the results of this study, and considered the 2 µg/kg as the "threshold" NOEL. The LEL was 4 µg/kg. There was no developmental toxicity in any dose group, and the NOEL for developmental effect was 8 µg/kg (HDT). This study satisfies the data requirements for a developmental toxicity study in rabbits (Guideline No. 83-3(b); MRID No. 92196015).

(3) Bromethalin Developmental Toxicity

A developmental toxicity study was conducted with Harlan Wistar rats (25 rats/group). Rats were orally gavaged on gestation days 6 through 15 at a dosing volume of 5 ml/kg with 0 (vehicle, PEG-200), 0.1, 0.3, or 0.5 mg/kg/day bromethalin technical. Surviving dams were sacrificed on gestation day 20, necropsied and reproductive findings were recorded. The NOEL for developmental toxicity is 0.5 mg/kg/day (HDT). There were no compound-related external, visceral or skeletal effects in bromethalin-treated fetuses in comparison to controls on either a litter or fetal basis.

The NOEL for maternal toxicity is 0.3 mg/kg/day and the LOEL is 0.5 mg/kg/day. Several effects occurred at the 0.5 mg/kg/day including four deaths during gestation (gestation days 12, 16, 17, and 17). Three high-dose females revealed upper respiratory tract infections which was regarded as secondary due to physiological stress from treatment. Additionally, in 10 of the 25 high-dose females, including the four which died, clinical signs consisting of hind leg weakness and decreased muscle tone were seen. Other observations included poor grooming, weakness, ventral soiling, chromodacryorrhea, decreased respiration, labored respiration, hypothermia, hind leg paralysis, prostration and dehydration.

During the dosing period, high-dose dams had a 30.2% decrease in weight gain in comparison to controls. During the post dosing period, weight gain in the high-dose females was decreased by only 11.7% in comparison to controls. Due to the substantial decreased weight gain during the dosing period, the high-dose females experienced a 13.9% decrease in weight gain for the entire gestation period in comparison to controls. These decreased weight gains are considered to be treatment-related. Food consumption was decreased by 8.7% in high-dose animals in the post dosing period in comparison to controls. The observed decrease in weight gain during the post dosing period may be because of decreased food consumption. The food consumption was comparable between controls and treated groups, including the high-dose group at other times (MRID 00086731).

A second developmental toxicity study was conducted with Dutch Belted rabbits (15/group). In this study, rabbits were orally gavaged at a volume of 1 ml/kg with bromethalin at doses of 0 (PEG-200, vehicle), 0.10, 0.25, or 0.50 mg/kg/day during gestation days 6 through 18. Surviving does were sacrificed on gestation day 28 and reproductive parameters were determined. The NOEL for developmental toxicity is 0.5 mg/kg/day (HDT). There were no compound-related external, visceral or skeletal effects in bromethalin-treated fetuses in comparison to controls on either a litter or fetal basis.

The NOEL for maternal toxicity is 0.10 mg/kg/day. Clinical signs of toxicity were observed in two females at 0.25 mg/kg/day and 5 females in the 0.50 mg/kg/day group. These signs included nasal discharge, loss of muscle tone, weakness, decreased respiration, coolness, and prostration. Two high-dose does died; one on gestation day 16 and one on day 21. The two high-dose does that died had clinical signs before death. One female that died had pneumonia and an empty gastrointestinal tract, and the other had an acute upper respiratory tract infection. Additionally, two high-dose does, one mid-dose doe and one low-dose doe aborted. The two high-dose and the one low-dose does that aborted had gastric trichobezoars in an otherwise empty gastrointestinal tract. The mid-dose doe which aborted had an empty gastrointestinal tract. The clinical signs, abortions and deaths at the top dose and the clinical signs at the mid-dose are considered compound-related. Mid and high-dose animals had decreased weight gains during the dosing period, which are considered compound-related. Food consumption was comparable between control and treated does during gestation. Although values for the mid-dose animals were lower than controls, this finding was not dose-related and is not considered compound-related (MRID 00101545).

(4) Chlorophacinone Developmental Toxicity

In a preliminary range-finding study in rats (MRID 43349501) chlorophacinone (analytically determined concentration 101%) was administered at days 6-15 of gestation at doses

of 0, 1, 5, 25, 50, 100 or 200 µg/kg/day to groups of 8 mated Sprague-Dawley female rats. Mortalities occurred at 100 and 200 µg/kg/day. Five rats/dose level in the 0, 1, 5, 25 and 50 µg/kg/day groups were sacrificed on gestation day 16, and prothrombin and activated partial thromboplastin times were determined (Refer to Table 20).

It is noteworthy that while there was clotting in at least one sample from the controls and 3 lowest dose groups, this apparently did not occur in the 5 samples from rats of the 50 µg/kg/day group.

Table 20 - Prothrombin (PT) and Activated Partial Thromboplastin Times (APTT) in a Preliminary Rat Developmental Toxicity Study

	Dose Level (µg/kg/day)				
	0	1	5	25	50
Prothrombin Time (sec) ^a	12.2 ± 0.6 N = 4 ^b	12.9 ± 1.3 N = 2 ^b	12.8 ± 0.3 N = 4 ^b	12.6 ± 0.4 N = 3 ^b	13.0 ± 0.2 N = 5
Activated Partial Thromboplastin Time (sec) ^a	15.5 ± 2.1	23.9 ± 12.4	16.1 ± 1.4	16.2 ± 1.3	17.0 ± 0.9

^aReported as the mean ± S.E.M.

^bdecrease in N is due to the clotting of some of the samples on which the analysis could not be done.

In the subsequent developmental toxicity study (also in MRID 43349501) chlorophacinone (analytically determined concentration: 101% a.i.) was administered to groups of 25 Sprague-Dawley female rats/dose level by gavage at doses of 0 (vehicle only), 12.5, 25, 50 or 100 µg/kg/day on gestation days 6-15 inclusive. The test compound was administered as a suspension in corn oil. Eighteen high-dose (100 µg/kg/day) rats died or were sacrificed moribund (gestation days 12-16) with necropsy findings (blood in vagina and amniotic sacs, blood in stomach and/or small and/or large intestines) indicative of anticoagulant effects. There were no indications of maternal toxicity at 50 µg/kg/day. Treatment-related effects for developmental anomalies, were noted at the lowest dose and above as increased fetal and litter incidences of distended ureter (Refer to Table 21).

Table 21 - Fetal and Litter Incidences of Treatment Related Effects in a Rat Developmental Toxicity Study (doses in µg/kg/day)

	Control 0	Low 12.5	Low Mid 25	High Mid 50	High 100
# pups/# litters examined	205/25	186/24	206/25	196/24	55/7
Hydroureter:					
Bilateral	4/4	8/4	23/10	21/9	12/3
Left	2/2	3/3	3/3	5/4	0/0
Right	0/0	0/0	0/0	1/1	1/1
TOTAL INCIDENCE	6/6	11/5	26/11	27/11	13/4
% Incidence	2.9/24.0	5.9/20.8	12.6/44.0	13.8/40.7	23.6/57.1
Distended ureter:					
Bilateral	1/1	2/2	3/2	4/4	1/1
Left	1/1	4/3	3/3	6/6	1/1
TOTAL INCIDENCE	2/2	6/4	6/5	10/7	2/2
% Incidence	1.0/8.0	3.2/16.7	2.9/20.0	5.1/25.9	3.6/28.6
Total ureter anomaly:					
incidence:	8/6	17/10	32/13	37/14	15/5
% Incidence	3.9/24.0	9.1/41.7	15.5/52.0	18.9/51.9	27.3/71.4

At the highest dose (100 µg/kg/day) there was an increased total incidence (16/55 fetuses in 5/7 litters; controls: 14/205 fetuses in 10/25 litters) of enlarged lateral ventricle. At 50 µg/kg/day there was an increased incidence of extra rib on lumbar vertebrae I (not noted at 100 µg/kg/day; however, fewer litters were available for examination). For malformations, there were increased fetal and litter incidences of bilateral hydroureter at 25 µg/kg/day.

The rat maternal toxicity NOEL = 50 µg/kg/day.

The rat maternal toxicity LOEL = 100 µg/kg/day (based on mortality)

The rat developmental NOEL is < 12.5 µg/kg/day.

The rat developmental LOEL is < = 12.5 µg/kg/day (increased incidences of hydroureter, distended ureter and total ureter anomaly).

This developmental toxicity study in the rat is classified as acceptable and satisfies the guideline 83-3(a) requirement for a developmental toxicity study in the rat.

In a preliminary range-finding developmental toxicity study in rabbits (MRID 43570801), chlorophacinone (analytically determined concentration 101%) was administered at 0, 1, 2, 5, 10, 50 or 100 µg/kg/day to groups of 5 mated female rabbits. In addition, there were five satellite groups, each containing 3 rabbits dosed at 0, 1, 2, 5 or 10 µg/kg/day. The dosing period was from gestation days 7 through 19; satellite females were sacrificed on gestation day 20 and their blood was analyzed for Prothrombin Time (PT) and Activated Partial Thromboplastin Time (APTT) measurements. Both the mean PT and APTT were elevated in the 10 µg/kg/day females (refer to Table 22).

Table 22 - Prothrombin (PT) and Activated Partial Thromboplastin Times (APTT) in a Preliminary Rabbit Developmental Toxicity Study Chlorophacinone (µg/kg/day)

	0	1	2	5	10
No. of female rabbits bled	3	3	3	3	3
Prothrombin Time (sec) ^a	8.1 ± 0.5	7.8 ± 0.2	7.9 ± 0.1	8.7 ± 0.6	11.6 ± 2.1
Activated Partial thromboplastin Time (sec) ^a	26.5 ± 5.7*	26.6 ± 3.7	23.2 ± 1.5	26.4 ± 4.9	53.0 ± 14.3

^aReported as the mean ± S.E.M.

*p < 0.05; Jonckheere's Test (significant by trend test)

Table from page 167 of MRID 43570801.

In the subsequent developmental toxicity study in rabbits (MRID 43570801), chlorophacinone (analytically determined concentration reported as 101%) was administered to 16 New Zealand white rabbits/dose level by oral gavage at dose levels of 0, 5, 10, 25 or 75 µg/kg/day from gestation days 7 through 19, inclusive.

There was maternal mortality in 13/16 high mid (25 µg/kg/day) and 16/16 high dose (75 µg/kg/day) rabbits, with hemorrhage (neck, thoracic cavity, vagina, uterus, amniotic sacs, and GI tract). Increased incidences of external bleeding around the mouth, ears, and urogenital system, along with pale eyes, ears, lips/gums, lethargy and blood in the pan beneath the cage, were noted in the two highest dose groups. No evidence of treatment-related fetotoxicity was

noted in the cesarean section observations. However, due to the low number of surviving litters (3) at 25 µg/kg/day, and the lack of surviving litters at the highest dose (75 µg/kg/day), developmental toxicity cannot be assessed at these doses, and 10 µg/kg/day will be considered as the NOEL for developmental toxicity. This developmental toxicity study in the rabbit is classified as Acceptable (Guideline 83-3(b)), and satisfies the guideline requirement for a developmental toxicity study in the rabbit.

The rabbit maternal toxicity NOEL is 5 µg chlorophacinone/kg/day. The LOEL is 10 µg/kg/day (based on increased prothrombin and activated partial thromboplastin times in the preliminary range-finding study. These measurements were not made in the subsequent developmental toxicity study). The rabbit developmental toxicity NOEL is 10 µg/kg/day, based on the lack of sufficient fetuses/litters at the next highest dose level (25 µg/kg/day) available for evaluation. This developmental toxicity study (Guideline 83-3(b) in the rabbit is classified as acceptable.

(5) Diphacinone and its sodium salt Developmental Toxicity

In a developmental toxicity study in rats (MRID 42834801), technical diphacinone (purity > 97%) in corn oil was administered via gavage to groups of 25 mated female Sprague-Dawley rats/dose level at 0, 10, 25 or 75 µg/kg/day on gestational days 6-15, inclusive. There were no effects on maternal body weight or weight gain. Reddish vaginal discharge, reddish urogenital staining and/or reddish fluid in the cage/tray were observed in one dam from the control group, two dams at 10 µg/kg/day, three dams at 25 µg/kg/day, and six dams at 75 µg/kg/day. One dam (with these symptoms) in the 75 µg/kg/day group was euthanized *in extremis* on day 15. A NOEL was not established for maternal toxicity then, as there was a dose-related increase in incidence of clinical signs of the anticoagulant effects of diphacinone through all dose levels. No compound-related altered growth and/or developmental anomalies were observed. There was an increased number of early resorptions and resorptions/dam at 75 µg/kg/day (52 and 2.2 ± 1.8 , respectively, compared to control values of 33 and 1.4 ± 1.5). These increases were not statistically significant, and were within the upper limit of historical control data. However, 33% mortality was observed at 100 µg/kg/day in a range-finding study, and the increased number of resorptions is consistent with what was observed in a mouse developmental toxicity study (MRID 00077319) at a dose level (2.5 mg/kg/day) at which 5/5 pregnant females died.

The rat maternal toxicity NOEL < 10 µg/kg/day.

The rat maternal toxicity LOEL = 10 µg/kg/day (based on signs consistent with anticoagulant activity)

The rat developmental NOEL = 25 µg/kg/day.

The rat developmental LOEL = 75 µg/kg/day (based on an increased incidence of resorptions)

This developmental toxicity study in the rat is classified as acceptable, and satisfies the guideline (Guideline 83-3(a) requirement for a developmental toxicity study in the rat).

It is noted that no clotting time measurements were obtained in this rat developmental toxicity study, and that there is no rabbit developmental toxicity study. The Agency has received, for brodifacoum and chlorophacinone, both rat and rabbit developmental toxicity studies. For both of these anticoagulants, the rabbit is the more sensitive species, particularly with respect to mortality.

f. Mutagenicity

Results of mutagenicity studies for brodifacoum, bromadiolone, bromethalin, chlorophacinone and diphacinone and its sodium salt indicate the following:

Salmonella typhimurium. There were no indications of an increased number of revertants at the histidine locus in any of the strains used.

In Vivo Testing. While different species were used such as Chinese hamsters and mice, results were consistent and there was no evidence of induced mutagenicity response to any strains at any non-activated or activated dose levels.

In Vitro Testing. Testing was performed for chlorophacinone and bromadiolone. Based on this testing it can be concluded that at doses up to and including those associated with cytotoxicity (50 µg/ml), did not induce a clastogenic response in human lymphocytes under the conditions of this assay either in the presence or absence S9.

Appendix C of this document provides the MRID numbers and names of studies used to support these mutagenicity findings.

g. Metabolism

(1) Brodifacoum Metabolism

In the first part of a metabolism study (MRID 44021705) brodifacoum, 3-[3-(4'-bromo-[1,1'-biphenyl]-4-yl)-1,2,3,4-tetrahydro-1-naphthalenyl]-4-hydroxy-2H-1-benzopyran-2-one, radiochemical purity > 98%, radiolabeled (^{14}C) in the benzene ring of the benzopyran, was administered to 3 previously bile-duct cannulated CrI:CD(SD)BR strain male rats as a single oral administration at a nominal dose level of 10 mg/kg body weight, well above the LD_{50} value of 0.3 mg/kg. The rats had been pre-dosed with vitamin K_1 in their drinking water, but showed symptoms of anticoagulant toxicity before sacrifice at 48 hours. Bile, urine and feces were collected at pre-dose, 6, 12, 24, and 48 hr post-dose, and radioactivity was determined in these samples, as well as in the livers and residual carcasses. The metabolite profiles of ^{14}C -brodifacoum in bile and bile extracts were examined by chromatographic and spectroscopic techniques.

Total mean recovery of radioactivity was $102.9 \pm 8.1\%$. Recovery from feces (presumably unabsorbed brodifacoum) was $36.11 \pm 8.83\%$; from liver was $14.79 \pm 0.41\%$; from the residual carcass: $42.85 \pm 5.06\%$. The mean from bile (all 3 animals) was $6.40 \pm 5.45\%$, but one rat had poor bile flow, possibly from blockage in the cannula. The two remaining animals had a mean 9.53% of the label in bile.

The major (and only identified) metabolite of brodifacoum in bile was the glucuronide (attachment to the 4-hydroxy moiety of brodifacoum), which accounted for 39.43 to 77.28% of the total radioactivity in individual bile samples, while brodifacoum represented 0.00 to 24.95% of the total activity. Further characterization appeared to split the glucuronide peak into 2 components, and while the cis:trans ratio of parent material was 70:30, the ratio in the glucuronide was reversed (30:70). One unidentified metabolite (region 10) ranged from 1.59 to 21.7% total radiolabel.

Although only one metabolite (the glucuronide) is identified, it is the parent compound which is of toxicological concern, and the registrant has adequately demonstrated in previously submitted studies (refer to MRIDs 00080235 and 42007502) that a high proportion of unmetabolized compound is retained, particularly in the liver.

In a second study (*in vitro* perfusion, also in MRID 44021705) the lower vena cava of a single male rat was ligated. The hepatic portal vein was then cannulated and the liver was cleared of blood and the bile duct cannulated. The liver was perfused and, after equilibration, ¹⁴C-brodifacoum, at a dose of 10 mg/kg, was added to the main perfusate reservoir. Bile and perfusate were collected at pre-dose, 1 minute (perfusate only), 1, 2, 3, 4 and 6 hr post-dose. The radioactivity present in bile, perfusate, terminal perfusate supernatant, supernatant filtrate and liver was determined. There was 74.32% recovery after 6 hours, with 59% of the total in perfusate, and 15.19% in liver. Metabolite profiling was attempted, but no metabolites were identified. All radioactivity in the perfusate supernatant was bound to perfusate proteins, with no activity being measured in the aqueous filtrate.

In a metabolism study (MRID 42007502), groups of male rats received single oral doses of ¹⁴C-labeled brodifacoum at different dose levels (Group 2: 0.02 mg/kg; Group 3: 0.15 mg/kg; Group 4: 0.35 mg/kg), and blood was taken from 1-3 rats/group at various intervals following this dosage. The following Kaolin Cephalin Time (KCT) and Prothrombin Time (PT) measurements were made as outlined in Table 23 below:

Table 23 - Kaolin Cephalin and Prothrombin Time in a Metabolism Study in Male Rats

	Clotting times (seconds)					
	Group 2: 0.02 mg/kg		Group 3: 0.15 mg/kg		Group 4: 0.35 mg/kg	
Time after Dosing	KCT	PT	KCT	PT	KCT	PT
6 hr	-	-	-	-	ND	14.3 ± 1.7
12 hr	-	-	-	-	ND	20.7 ± 3.7
18 hr	-	-	-	-	43.7 ± 2.1	37.2 ± 5.4
24 hr	14.9 ^a ± 4.2	13.0 ^a ± 1.8	15.8 ± 4.8	13.0 ± 1.1	58.9 ± 7.6	95.5 ± 2.7
48 hr	-	-	-	-	113.7 ± 10.6	147.6 ± 6.9
72 hr	-	-	-	-	92.8 ± 49.4	39.7 ± 19.4
96 hr	-	-	-	-	32.3 ± 7.2	18.8 ± 2.0
Day 8	-	-	-	-	21.3 ^a ± 2.4	15.8 ^a ± 1.2
Day 14	-	-	14.0 ± 1.1	14.3 ± 0.2	15.4 ± 4.5	17.4 ± 0.5
Day 28	14.9 ^a ± 1.1	12.7 ^a ± 0.3	21.3 ± 2.9	13.6 ± 0.6	20.2 ± 2.9	13.4 ± 0.4
Day 56	-	-	16.2 ^a ± 2.4	12.7 ^a ± 0.6	19.6 ^a ± 2.2	13.3 ^a ± 0.2
Day 84	-	-	-	-	17.2 ± 2.9	12.5 ± 0.4
Week 13	14.1 ^a ± 1.1	15.4 ^a ± 0.6	16.5 ± 1.4	13.8 ± 0.2	-	-
Week 26	-	-	12.3 ^b	16.1 ^b	-	-
Week 39	16.6 ± 4.3	13.5 ± 1.2	15.0 ± 1.7	13.8 ± 0.5	-	-
Week 52	-	-	15.6 ± 6.2	12.7 ± 1.2	-	-
Week 65	16.7 ± 3.3	13.5 ± 0.8	18.0 ± 3.2	13.2 ± 0.5	-	-
Week 78	-	-	18.6 ± 1.3	12.8 ± 1.2	-	-
Week 91	16.8 ± 2.0	14.6 ± 0.4	19.8 ± 2.2	15.1 ± 1.5	-	-
Week 104	14.7 ± 3.0	11.1 ± 1.0	13.2 ± 0.5	10.9 ± 0.6	-	-

The standard deviation (SD) is derived from data obtained with 3 animals per group.

^a2 values only

^b single value only

ND = not determined

Table taken from p. 26 of MRID 42007502.

The results given above clearly show an increase in clotting time in rats which had received a single oral dose of 0.35 mg/kg. Assuming the effect was manifested as a doubling of the normal clotting time (to approximately 30 seconds for kaolin cephalin and/or prothrombin times), effects were evident as soon as 18 hours after dosage, and were still present at 96 hours post-dosage. In addition, the metabolism study in MRID 42007502 demonstrates that considerable amounts of the radiolabel are retained in the liver following dosage (refer to the Table 24).

Table 24 - Percentage of radioactivity retained in the liver following single-dose administration of ¹⁴C Brodifacoum

Time after dosing	Group 2: 0.02 mg/kg		Group 3: 0.15 mg/kg		Group 4: 0.35 mg/kg	
	Mean	SD	Mean	SD	Mean	SD
Day 1	47.33	± 10.87	29.71	± 4.40	28.92	± 1.79
Week 4	39.16	± 3.50	37.07	± 1.94	23.47	± 1.21
Week 8	-		30.86	± 4.23	23.00	± 0.09
Week 12	-		-		21.24	± 3.19
Week 13	34.01	± 2.49	31.74	± 5.13	-	
Week 39	20.33	± 0.42	22.02	± 2.83	-	
Week 65	15.97	± 2.33	15.36	± 3.03	-	
Week 91	10.57	± 1.08	12.39	± 3.08	-	
Week 104	11.78	± 0.97	11.74	± 1.64	-	

Table from data on pages 30-32 of MRID 42007502.

It is concluded that overall there is sufficient metabolism data (including excretion, distribution, retention half-life and amounts retained within different organs). This metabolism study in the rat, taken with previously submitted metabolism studies (in MRIDs 00080235 and 42007502) is classified as acceptable. The combination of these studies is adequate to satisfy the 85-1 data (metabolism study) guideline requirement.

Groups of male Sprague-Dawley rats received a single dose (0.2 mg/kg bw) of brodifacoum, bromadiolone, or flocoumafen by gavage. A control group consisting of 9 male rats which received nothing was also included in the study. The results showed that the levels of brodifacoum in the liver declined very slowly during the duration of the study as indicated by the difference between day 1 (1.107 µg/g) and day 200 (0.539 µg/g). During the first 28 days after dosing, the decline of the liver concentrations of bromadiolone and flocoumafen was faster than that of brodifacoum as indicated by the $t_{1/2}$'s of these 3 chemicals at the first 28 days (brodifacoum: $t_{1/2}$, 63 days; bromadiolone: $t_{1/2}$, 17 days; flocoumafen: $t_{1/2}$, 6 days). The decline of the liver concentrations of these 3 test chemicals occurred in a "bi-exponential manner". The second $t_{1/2}$'s were estimated to be 282, 318, and 159 days for brodifacoum, bromadiolone, and flocoumafen, respectively. In general, oral administration of any of these 3 chemicals would result in substantial retention of the chemical in the liver for a very long time. The initial report of this study contained deficiencies which were rectified in subsequent supplemental data submission. This study satisfies the data requirement for a modified metabolism study on bromadiolone (Guideline No. 85-1; MRID No. 42596801).

(2) Bromadiolone Metabolism

Groups of male Sprague-Dawley rats received a single dose (0.2 mg/kg bw) of brodifacoum, bromadiolone, or flocoumafen by gavage. A control group consisting of 9 male rats which received nothing was also included in the study. The results showed that the levels of brodifacoum in the liver declined very slowly during the duration of the study as indicated by the difference between day 1 (1.107 µg/g) and day 200 (0.539 µg/g). During the first 28 days

after dosing, the decline of the liver concentrations of bromadiolone and flocoumafen was faster than that of brodifacoum as indicated by the $t_{1/2}$'s of these 3 chemicals at the first 28 days (brodifacoum: $t_{1/2}$, 63 days; bromadiolone: $t_{1/2}$, 17 days; flocoumafen: $t_{1/2}$, 6 days). The decline of the liver concentrations of these 3 test chemicals occurred in a "bi-exponential manner". The second $t_{1/2}$'s were estimated to be 282, 318, and 159 days for brodifacoum, bromadiolone, and flocoumafen, respectively. In general, oral administration of any of these 3 chemicals would result in substantial retention of the chemical in the liver for a very long time. The initial report of this study contained deficiencies which were rectified in subsequent supplemental data submission. This study satisfies the data requirement for a modified metabolism study on bromadiolone (Guideline No. 85-1; MRID No. 42596801).

(3) Bromethalin Metabolism

A metabolism study was conducted in Fischer 344 rats following oral administration of ^{14}C -bromethalin at 1 mg/kg. Blood samples were taken from the orbital sinus at 0.25, 0.5, 1, 2, 4, and 24 hours, and at 2, 3, 4, 6, 8, 11, 14, 17, and 21 days after dosing. Based on radiolabeled material, the plasma half-life was 134 hours (5.6 days). The half-life of the distributive phase suggested distribution in total body water. The $T_{1/2}$ of bromethalin is 5.6 days. The major metabolite formed in the rat is desmethyl bromethalin. The study (MRID 0004724) was classified as acceptable.

(4) Diphacinone and its sodium salt Metabolism

In a metabolism study (MRID 92049009), the disposition of ^{14}C -diphacinone was studied in Sprague-Dawley rats, Swiss albino mice, and Diphacinone-tolerant Norway rats. Sprague-Dawley rats received single oral doses of 0.18, 0.4 mg/kg (group A, 2 rats/group), 0.5, or 1.0 mg/kg (group B, 1 rat/group) labeled diphacinone and urine and feces collected up to 3 days post-dose (group A) or 8 days post-dose (group B). Swiss mice (1 mouse/group) received 0.6 mg/kg labeled diphacinone by oral intubation or sandwich method and urine and feces collected up to 4 days post-dose. Norway rats (1 rat) received 4 consecutive doses of 3.5 mg/kg labeled diphacinone and 1 dose of 6.1 mg/kg labeled diphacinone. Blood samples were obtained at 4, 6, 7, and 8 hours after the last dose and at 26 hours (time of sacrifice). A group of 10 diphacinone-tolerant Norwegian rats received 1.5 mg/kg labeled diphacinone in DMSO daily for 2-3 days to obtain enough excreta for metabolite identification. Because 4 different batches of labeled diphacinone were prepared for this study (label in different positions for each batch), eight Sprague-Dawley rats (2 females/group) received approximately 42 μg of labeled diphacinone from each labeled batch as a single oral dose, and TLC autoradiograms from these 4 labels were compared.

Absorption appeared fairly rapid but was only estimated in one rat, as judged by the blood levels measured over time. Distribution data showed that the liver, muscle, blood, fat, and lung were the tissues demonstrating the greatest retention of the test chemical in the order liver (14-25% of the dose), muscle (0.18-4.4% of the dose), fat (0.55-1.16% of the dose), and lung (0.04-0.5% of the dose). Rats appeared to show greater retention than mice of test chemical, but data were inconclusive based on limited numbers of animals and poor experimental design.

Half-life, as estimated in the single Norway rat, was stated as 17 hours, but is likely an underestimation. Elimination of diphacinone derived radioactivity was primarily in feces, with between 47-77% of the dose in feces of rats, and 69-73% of the dose in mice. At least five metabolites of diphacinone were identified in urine, feces, and/or liver. These metabolites represent hydroxylated products of diphacinone occurring on the phenyl and indandionyl rings.

This study is classified as unacceptable and does not satisfy the guideline requirement 85-1 for a metabolism study in rats. The unacceptable classification is based on the following deficiencies observed in this study:

- 1) Inadequate number of animals per dose group.
- 2) Four different radiolabeled parent compounds were administered in this study. Distribution data show that blood, liver, muscle and fat contained the highest amount of radioactivity, but the percentages found might depend on the label position. The excretion of only two different radiolabeled compounds was followed to any degree.
- 3) Inadequate experimental design for analysis of half-life.
- 4) Inadequate data on recovery of radioactivity from dosed animals.
- 5) No stated rationale for doses used.

The Agency requires metabolism data more adequately defining the half-life of diphacinone in the rat, as well as retention data for the liver.

(5) Chlorophacinone Metabolism

Agency records indicate only one metabolism study (MRID 00155540) on chlorophacinone has been received. Several experiments were conducted, including blood kinetics (2 experiments with a determination of radioactivity in organs 4 and 48 hours following dosage; urinary, fecal and biliary excretion).

In the first blood kinetics assay, four rats each received orally 1 mg of ^{14}C -labeled chlorophacinone. The following mean blood concentrations were measured as outlined in Table 25 below:

Table 25 - Mean blood concentration of chlorophacinone (in μg equivalents) following oral administration of 1 mg chlorophacinone

	30 min.	1 hr.	2 hr.	4 hr.	6 hr.	8 hr.	24 hr.	48 hr.
Mean Blood Conc.	1.4	2.4	4.1	6.4	6.4	5.9	1.8	0.3

Chromatography and autoradiography demonstrated that the chlorophacinone remained unchanged in plasma, with a blood half-life of about 10 hours.

Organs of the rats used in the first blood kinetics study were assayed for radioactivity. The following results were obtained as outlined in Table 26 below:

Table 26 - Mean concentration of chlorophacinone ($\mu\text{g/g}$ of organ)

Organ	4 hours	48 hours
Liver	31.1	2.9
Kidney	6.6	1.2
Lung	4.5	0.4
Heart	3.1	0.2
Muscle (thigh)	2.0	0.1
Fat	1.2	0.7
Carcass	5.2	0.3

In a second blood kinetics study, two rats each received 1.43 mg of ^{14}C -labeled chlorophacinone/day for 3 days. Blood samples were taken at various times following the third dose, with the following blood concentration measurements as outlined in Table 27 below.

Table 27 - Mean blood concentration of chlorophacinone (in μg equivalents) following three daily oral administrations of 1.43 mg chlorophacinone

	30 min.	1 hr.	2 hr.	4 hr.	6 hr.	8 hr.
Mean Blood Conc.	7.1	8.9	10.2	11.5	12.2	14.2

In an elimination assay, two rats were used. One received 1.43 mg of ^{14}C -labeled chlorophacinone and the second received 1.28 mg ^{14}C -labeled chlorophacinone. Daily assays were made of urine, feces and CO_2 for four days. The rats were sacrificed and radioactivity was measured in blood, organs and carcass. Urine and feces were extracted and measured by TLC and autoradiography.

Urine and CO_2 radioactivity were less than 1% of the total dose. Most of the radioactivity was excreted in the feces (94.7% in one rat and 108.6% in the other over the 4-day period). Excretion reached 90% in the first two days.

In a biliary excretion assay, two rats were used. Each received 1.4 mg of chlorophacinone intraduodenally. Bile was collected for 8 hours and total radioactivity was measured. TLC and autoradiography were performed on the bile directly before and after hydrolysis with glucuronidase.

Two hours after administration of chlorophacinone in the duodenum, biliary elimination was constant. At the end of 8 hours, an average of 26% of the administered radioactivity was eliminated in the bile.

The information provided in MRID 00155540 adequately addresses the guideline requirements 85-1 for a metabolism study for a highly toxic anticoagulant with no chronic

exposure. Although it is reported that there is over 90% excretion in the two days following dosage, the findings in the subchronic study (MRID 92018013) indicate there is a potential for bioaccumulation (or cumulative toxicity). In the subchronic study, there were mortalities at 40 µg/kg/day in 10/10 males (deaths occurred days 29-82) and 4/10 females (deaths on days 69-111), and there were also mortalities at 20 µg/kg/day in 4/10 males (deaths on days 105-111).

h. Other Toxicological Considerations

(1) Brodifacoum - Other Toxicological Considerations

In an antidotal study (MRID 42007501), four male beagle dogs each received a single oral dose of 5 mg/kg brodifacoum (96.8%). Prothrombin times for each of the dogs were then monitored over a period of five weeks. "Doses of 2 mg/kg vitamin K₁ were administered to dogs by the intramuscular route whenever their prothrombin times were elevated to levels consistent with a life-threatening effect on coagulation." Individual dogs required 12-15 vitamin K₁ treatments in the period from days 2 to 29 post-dosing. All four dogs survived to the end of this study (5 weeks after the test material was administered). However, based on elevations in prothrombin time, vitamin K₁ had to be administered to one dog on day 29. This dog had also been treated with vitamin K₁ on days 23 and 24 as well as on previous occasions, and the last prothrombin time measurement for this dog was on day 34. The possibility exists that this dog would have required additional vitamin K₁ treatments after day 34.

(2) Bromadiolone - Other Toxicological Considerations

In an antidotal treatment study, groups of male Crl:CD^R rats (10/dose) were exposed to bromadiolone baited pellets (0.005% a.i.) for 24, 48, or 78 hours. The estimated mean total bromadiolone doses were 5.69, 9.76, and 15.63 mg/kg for 24-, 48-, and 72-hour groups, respectively. At the end of the exposure period, the first 5 surviving rats of each group were given vitamin K₁ at 5 mg/kg. Initially, a loading dose was given subcutaneously, and subsequently, vitamin K₁ was administered daily by gavage for 13 days. The survivors were sacrificed at 8 to 10 days after discontinuing the vitamin K₁ treatment.

The animals which did not receive vitamin K₁ died in each exposure group. The deaths frequently occurred within 3 to 4 days of the study. The clinical and gross pathology findings were hemorrhage-related toxicity in all test-article treated animals. The death rates in vitamin K₁ treated animals were 1/5, 2/5, and 5/5 in the 24-, 48-, and 72-hour exposure groups, respectively. With vitamin K₁ treatment, the clinical findings (hemorrhagic-related toxicity) were resolved by the 5th day of the antidote treatment, and the decrease in body weight observed during the bromadiolone treatment was also restored in the surviving animals. At the 2nd week of the study, the prothrombin times of the vitamin K₁ treated animals were essentially comparable to those of the controls. However, for the 48-hour exposure group, the prothrombin time was slightly decreased relative to that of the control.

The results demonstrate that vitamin K₁ treatment, as employed in this study, can restore the clotting process of an animal which is exposed to bromadiolone below an estimated total dose of 15.63 mg/kg body weight during a 72 hour period. However, the antidotal treatment may not completely prevent death (i.e. all the rats died in 72-hour exposure groups with vitamin K¹

treatment) when rats are exposed to bromadiolone even at the lowest exposure dose (5.69 mg/kg) in this study. This study satisfies the data requirements for an antidotal study (Guideline 86-1; MRID No. 42093301).

(3) Bromethalin - Other Toxicological Considerations

The following information is in the Agency's files and are supportive of the endpoint of toxicological concern identified in the above studies.

Ph.D. Dissertation entitled "Bromethalin-Based Rodenticides: Mode of Action, Toxicity, Clinical Effects, and Treatment Efficacy in Rats, Dogs, and Cats", by D. Dorman, University of Illinois, Dept. of Veterinary Biosciences (MRID 42759602).

This dissertation is a summary of information found in the literature. According to the summary page of the dissertation, "The purpose of these studies was to define the toxicity of bromethalin-based rodenticides, develop treatments, and determine new modes of action of bromethalin..... Sublethal doses of bromethalin to dogs and cats resulted in delayed CNS depression, hind-limb ataxia, paresis, and paralysis. Higher doses given to dogs resulted in rapid severe muscle tremors and generalized seizures. Bromethalin toxicosis was also associated with increased cerebrospinal fluid pressure and cerebral edema. Bromethalin toxicosis produced acute and chronic EEG changes. Predominant abnormal EEG changes included spike and spike-and-wave EEG patterns; high voltage slow wave activity; photoconvulsive or photoparoxysmal irritative responses, and marked voltage depression. Histologic lesions included diffuse white matter spongiosis, mild microgliosis, and optic nerve vacuolization. Ultramicroscopic examination of brainstem revealed occasional swollen axons, intramyelinic vacuolization, and myelin splitting at the intraperiod line."

The Toxicity and Mechanism of Action of Bromethalin (MRID 42795603).

This publication is a journal article with only summary data. The study authors state "Doses in excess of the LD₅₀ (2 mg/kg in rats) will cause death within 8-12 hours and it is preceded by one to three episodes of clonic convulsions with death usually due to respiratory arrest. Multiple low doses or sublethal intoxication yield hind leg weakness and loss of tactile sensation in rodents. Histopathology of the brain and spinal cord of these animals revealed a spongy degeneration of the white matter which was shown upon ultramicroscopic examination to be intramyelinic edema. ...Mechanistic studies showed that bromethalin is rapidly converted to the desmethyl analog which is an extremely potent uncoupler of oxidative phosphorylation. It was theorized that if this occurs in the central nervous system, a fluid imbalance may ensue due to insufficient adenosine triphosphate (ATP). Fluid buildup in the cranium was determined by measuring cerebrospinal fluid pressure (CSFP), brain and spinal cord moisture, and cation concentrations."

Toxicity and Efficacy of Bromethalin (MRID 42795604).

This report is a published journal article with no raw data. The study authors state "Acute oral LD₅₀ values range between 1 and 13 mg/kg for several mammalian and avian species."

Results of experiments designed to determine the physiological and biochemical mechanism of action suggest that treatment with bromethalin results in the uncoupling of oxidative phosphorylation in central nervous system mitochondria."

(4) Chlorophacinone - Other Toxicological Considerations

In an antidotal study (MRID 41981101) groups of 10 male rats were offered pelleted end-use product (containing 0.005% chlorophacinone) as their sole dietary source of food for 24, 48 or 72 hours. Reported mean dose levels were 5.28, 4.73 and 5.03 mg chlorophacinone/day. About 1-2 hours after the end of their respective exposure periods, five males in each group received a subcutaneous injection of 5 mg/kg vitamin K₁, followed by vitamin K₁ by daily oral gavage (5 mg/kg/day) for the next 13 days. Animals were sacrificed 8-10 days after the last oral dose of vitamin K₁. Five animals in each dose group did not receive vitamin K₁ treatment.

All rats that ate the chlorophacinone-containing pellets and did not receive vitamin K₁ died. All rats treated with vitamin K₁ after 24-hour exposure to the chlorophacinone diet survived, as did 3/5 rats fed the chlorophacinone-containing diet for 48 hours. All of the vitamin K₁-treated rats which had been fed the chlorophacinone-containing diet for 72 hours died.

While vitamin K₁ has been shown to be a somewhat effective treatment following chlorophacinone ingestion, there were some mortalities among the rats which were given vitamin K₁ at 48 hours. This suggests a potential hazard if incidents occur involving pets or small children in which it is not known or realized that ingestion has occurred. It is noted that this antidotal study does not include prothrombin times. Such information, while not necessary for purposes of reregistration, could be useful to the Agency in defining hazards associated with exposure to chlorophacinone.

(5) Diphacinone and its sodium salt - Other Toxicological Considerations

A collection of published articles (in MRIDs 42791201, 42791202, 42791203) from the literature has been submitted to support the use of Vitamin K₁ as an antidote in treating diphacinone poisoning.

In one report (Mount, M. E. and B. F. Feldman, 1983. The Mechanism of Diphacinone Rodenticide Toxicosis in the Dog Clarified and Its Therapeutic Implications. Am. J. of Vet. Res. 44(11): 2009-2017; in MRID 42791201) the clinical effectiveness of Vitamin K₁ therapy in reversing anticoagulant effects of two rodenticides in male dogs was investigated. Warfarin and diphacinone were administered in the diet twice daily for 3 days. Warfarin was fed to one dog at a total dose of 5 mg (a.i.)/kg and diphacinone was fed to three dogs at 2.5 mg (a.i.)/kg. These doses would generally be lethal for repeated exposure. Evidence of coagulopathy was observed by day 3, and Vitamin K₁ therapy was initiated for all dogs on day 6 at divided doses 3 times/day over a 5-day interval. One warfarin and one diphacinone-dosed dog received 2.5 mg K₁/kg/day, while the other two diphacinone-dosed dogs received 5 mg K₁/kg/day. All animals survived to the termination of the study.

A single regime of vitamin K₁ (2.5 mg/kg/day for 5 days) was effective in reversing hypoprothrombinemia of the warfarin-treated dog. However, this regimen was ineffective for diphacinone-treated dogs, which required either 5 mg vitamin K₁/kg/day administered in repeated doses 3 times/day on days 6-10 and 16-20, or 2.5 mg vitamin K₁ in repeated doses on days 6-10, 16-20 and 26-30. In addition, one diphacinone-dosed dog received fresh plasma with the first vitamin K₁ injection.

The three diphacinone-exposed dogs had prolonged bleeding at venepuncture sites the last day of treatment. All dogs became clinically ill within the subsequent 3 days. Bleeding was observed in the diphacinone-exposed dogs as long as 2 weeks following exposure. An important finding was that the vitamin K-enzyme complex was inhibited in diphacinone-exposed dogs for approximately 30 days as indicated by routine coagulation screen tests and coagulation factor inhibition. No hepatic dysfunction was observed. There was a statistically significant reduction ($p < 0.001$) in pancreatic exocrine function although the resulting values were within the laboratory's reference range.

According to the published paper in MRID 42791201:

"The liver synthesizes the vitamin-K dependent coagulation proteins, factors II, VII, IX, and X, to inactive precursor forms dependent upon vitamin K for activation by a postribosomal protein modification. The inactive precursor proteins contain several glutamic acid residues which serve as the site for vitamin K function. These amino acids are carboxylated to form gamma-carboxyglutamic acid (G1a) residues which are responsible for activation of the coagulation protein. Calcium binding is dependent upon this cluster of carboxylic groups; without calcium binding the factor is nonfunctional. Hence, vitamin K serves as an essential cofactor for the enzyme that carboxylates protein-bound glutamic acid residues to G1a.

The molecular role of vitamin K in the carboxylation event is unclear. The carboxylase enzyme has been studied and its activity measured. A reductase, epoxidase (carboxylase-epoxidase enzyme), and epoxide reductase enzymes are also closely associated with the metabolic role of vitamin K... This...collectively represents the vitamin K-enzyme complex. This term is used since the complete biochemical mechanisms of vitamin K metabolism are not completely understood. The site of the biochemical lesion caused by anticoagulant rodenticides is the epoxide reductase enzyme... The carboxylase-epoxidase enzyme interaction...is not understood but results in G1a formation and conversion of vitamin K to the inactive epoxide. The epoxide can then be reconverted to the vitamin K quinone through the epoxide reductase enzyme... Without this enzyme vitamin K cannot be recycled. This results in rapid depletion of body stores of vitamin K..."

The material in MRID 427912201 satisfies the guideline data requirement (§86-1) for an antidotal study.

Diphacinone (as "Dipaxin") has been investigated and used as a therapeutic anticoagulant in humans (Correll, J.; Coleman, L.; Long, S.; Willy, R., 1952). According to this report, a single oral dose of 16 mg given to a healthy man weighing over 200 lbs resulted in no significant change in prothrombin determinations over a period of 48 hours. A second man of similar weight was given 32 mg, and changes in the prothrombin time were evident within a period of 4 hours. The maximum effect was seen at about 16 hours, with decrease in prothrombin time at 30 hours, and recovery to normal at 70 hours. A third patient, a 95-lb 22-year-old man received 32 mg as

a single dose; definite increase of prothrombin time was measurable within 23 hours, and a "therapeutic" effect (prothrombin time > 15 seconds) was evident within 48 hours. Following this single dose, 12 days were required for the prothrombin time to return to normal range. The dosage was then repeated, and prothrombin time was prolonged to 31 seconds (normal is about 12 seconds) within 36 hours. The following day, the patient received 50 mg of vitamin K intravenously. One hour later the prothrombin time was 26 seconds; 2 hours later it was 19 seconds, and approximately normal prothrombin values had been restored at 7 hours.

Dipaxin was given to a 30-year-old woman with post-operative venous thrombosis. Definite prolongation of the prothrombin time (to approximately 22 seconds) developed 24 hours after a single 32-mg dose. Repetition of this dose on the third day brought prolongation of the prothrombin time into the optimal therapeutic range (24-36 seconds), where it was maintained by 5 mg of Dipaxin daily. On the day of the last dose (day 13) the prothrombin time was 26 seconds, returning to normal range 3-4 days later.

Additional information on clinical investigations of Dipaxin in humans are given in Katz et al. 1954 (in which it is stated that "The prothrombopenic action of Dipaxin is readily counteracted with vitamin K₁ administered either orally or intravenously) and Field et al. 1952 (in which it is stated that, in man: "This agent induces an effective hypoprothrombinemia in single doses of as little as 4 mg... After single doses of 20 mg a marked hypoprothrombinemia was usually evident in 48 hours which persisted from 6 to 10 days... The recommended starting dose is about 20 mg... The maintenance of adequate clinical hypoprothrombinemia was obtained with daily doses of 2 to 4 mg. Hypoprothrombinemia was readily overcome with vit. K₂, the natural vitamin being more effective than the synthetic...").

2. Exposure Assessment

a. Dietary Exposure

These chemicals are non-food use pesticides. Therefore, it is unlikely that there will be any exposure to food sources or to residues in ground or surface water contamination.

b. Occupational and Residential Exposure

The following assumptions were made:

- All formulations are 0.005% a.i. (note: some end-use products formulations have a higher percent a.i., but using these would make a comparison of MOEs more difficult). In order to calculate MOEs for a higher percent a.i. the calculations would be adjusted accordingly;
- A child weighs 10 kilograms; and
- Poison specialists estimate that a child would consume approximately 5 grams in one bite.

These assumptions were extracted from the various rodenticides in this RED.

Using bromethalin as an example, the exposure (dose), and resulting MOE, a 10 kilogram child would receive from 5 grams of bromethalin at 0.005% active ingredient (a.i.) is:

$$5 \text{ grams} \times 1000 \text{ mg/gram} = 5000 \text{ mg}$$

$$5000 \text{ mg} \times .00005 \text{ (percent a.i.)} = 0.25 \text{ mg technical a.i. in 5 grams}$$

$$0.25 \text{ mg} / 10 \text{ kg} = 0.025 \text{ mg/kg (note: for any 0.005\% formulation this number will remain consistent for the listed rodenticides.)}$$

$$\text{MOE} = \text{NOEL} / \text{Exposure}; \text{NOEL} = 0.025 \text{ mg/kg}$$

$$\text{MOE} = 0.025 \text{ mg/kg} / 0.025 \text{ mg/kg} = 1$$

Table 28 summarizes the relative MOEs for the chemicals in the Rodenticide Cluster and for zinc phosphide. Normally any MOE less than one is expressed as: < 1. However, for comparison purposes the actual MOE has been put in the table. The Agency acknowledges that there is little confidence in the significant figures of results less than one.

Table 28 - Relative MOEs for the Chemicals in the Rodenticide Cluster and Zinc Phosphide

Chemical	a.i. of Typical EP	Tox. Endpoint	Amount consumed in one bite	Amount of technical consumed in one bite (mg/kg)	MOE
Bromethalin	0.05%	0.025 mg/kg/day	5 grams	0.025	1
Brodifacoum	0.05%	0.002 mg/kg/day	5 grams	0.025	0.08
Bromadiolone	0.05%	0.002 mg/kg/day	5 grams	0.025	0.08
Chlorophacinone	0.05%	0.005 mg/kg/day	5 grams	0.025	0.2
Diphacinone	0.05%	0.13 mg/kg/day	5 grams	0.025	5.2
Zinc Phosphide	2.0%	5 mg/kg	5 grams	0.10	0.5

The Agency notes that all the above rodenticides result in MOEs of concern assuming 0.05 percent active ingredient and a 5 gram dose for a 10 kg child, except for zinc phosphide. The Agency also notes the only zinc phosphide baits not restricted are 1 and 2 percent. To facilitate a risk management decision the rodenticides can be ranked, based on the above table. Zinc phosphide formulations contain 1 and 2 percent a.i. at a minimum, which results in MOEs of 1 and 0.5 respectively.

(1) Brodifacoum Occupational and Residential Exposure Assessment

At this time some products containing brodifacoum are intended primarily for homeowner use and some are intended primarily for occupational use.

(a) Handler Exposures & Assumptions

The Agency has determined that there is a potential exposure to applicators or other handlers during typical use-patterns associated with brodifacoum. Specifically, the Agency is concerned about potential dermal and inhalation exposures to handlers during the loading and application of brodifacoum.

Based on the use patterns and potential exposures described above, six major handler exposure scenarios were identified for brodifacoum: (1) placing bait packs; (2) loading bait boxes or bait stations with meal bait, grain bait, bait pellets, or other food-based bait from larger containers; (3) breaking paraffinized slabs, cakes, and blocks into pieces and placing the pieces at bait stations; (4) securing large paraffin blocks at bait stations in sewers; (5) applying bait by hand; and (6) applying bait (e.g., pellets) in broadcast treatments using ground equipment.

It is unclear from labels and other available information (1) the extent to which it is necessary, due to size or design of packages, for handlers to directly handle or contact the bait during bait station loading (which may result in dermal exposures); or (2) the extent to which it is possible for dusts associated with meal baits, grain baits, or pellets to result in inhalation exposure to handlers during bait station loading. Although the vapor pressure of brodifacoum is relatively low (9.8×10^{-7} Torr), the Agency is concerned about potential inhalation of particulates, fine particles and dusts associated with baits which could be inhaled resulting in ingestion/oral exposure.

Calculations of daily exposure to pesticidal active ingredients by handlers are used to assess risk to those handlers. There are no handler exposure data available for the use patterns associated with brodifacoum mixing, loading, and application.

(b) Post-Application Exposures & Assumptions

EPA has determined that there is a potential for exposure to users and others following applications of brodifacoum, particularly in residences. EPA has concerns about possible post-application exposures if: (1) baits are not placed out of reach of children or are not placed in tamper-resistant bait stations, as specified in labeling; (2) baits are available to homeowners in packages which are not tamper resistant or child resistant and could be accessible to children prior to application; and, (3) baits are brightly colored or packaged in a way in which they could be appealing to children or mistaken by children for food or candy.

(c) Occupational and Residential Characterization

Risk from Dermal and Inhalation Exposures

There are no exposure data currently available for calculating risks to handlers resulting from exposures to brodifacoum. However, EPA has several concerns about the risks to handlers of brodifacoum products, particularly commercial handlers (1) handling large quantities of product; (2) handling dusty, non-paraffinized products; or (3) applying products by hand. These concerns are based on (1) very high acute toxicity; (2) potential dermal absorption of toxicologically significant amounts; and, (3) absence of exposure data for all scenarios considered.

(2) Bromadiolone Occupational and Residential Exposure Assessment

At this time some products containing Bromadiolone are intended primarily for homeowner use, and some are intended primarily for occupational use.

(a) Handler Exposures & Assumptions

EPA has determined that there is a potential exposure to applicators or other handlers during typical use patterns associated with bromadiolone. Specifically, the Agency is concerned about potential dermal and inhalation exposures to handlers during the loading and application of bromadiolone at bait stations.

Based on the use patterns and potential exposures described above, four major handler exposure scenarios were identified for Bromadiolone: (1) placing bait packs at bait stations; (2) loading bait boxes or bait stations with meal bait or bait pellets from larger containers; (3) breaking paraffinized slabs, cakes, and blocks into pieces and placing the pieces at bait stations; and (4) securing large paraffin blocks at bait stations in sewers.

It is unclear from labels and other available information (1) the extent to which it is necessary, due to size or design of packages, for handlers to directly handle or contact the bait during bait station loading, which may result in dermal exposures; or (2) the extent to which it is possible for dusts associated with meal baits or pellets to result in inhalation exposure to handlers during bait station loading.

Calculations of daily exposure to Bromadiolone by handlers are used to assess risk to those handlers.

(b) Post-Application Exposures and Assumptions

EPA has determined that there is a potential for exposure to consumers and others following applications of bromadiolone, particularly in residences. EPA has concerns about possible post-application exposures if (1) baits are not placed out of reach of children or are not placed in tamper-resistant bait stations, as specified in labeling; (2) baits are available to homeowners in packages which are not tamper resistant and could be accessible to children; or (3) baits are brightly colored or packaged in a way in which they could be appealing to children or mistaken by children for food or candy.

(3) Bromethalin Occupational and Residential Exposure

At this time, some products containing bromethalin are intended primarily for occupational use, and some products are intended primarily for residential use.

An occupational and/or residential exposure assessment is required for an active ingredient if (1) certain toxicological criteria are triggered and (2) there is potential exposure to handlers (mixers, loaders, applicators) during use or to persons entering treated sites after application is complete.

(a) Handler Exposures and Assumptions

The Agency has determined that there is potential for exposure to applicators or other handlers during typical use-patterns associated with bromethalin. Specifically, the Agency is

concerned about potential accidental oral and inhalation exposures to handlers resulting from the loading and application of bromethalin at bait stations.

Occupational Handler Exposures

Based on the use patterns described above, four major handler exposure scenarios were identified for occupational handlers of bromethalin: (1) placing bait packs and bait cups at bait stations; (2) loading or recharging bait stations and bait trays with loose baits (meal baits, bait pellets, etc.); (3) putting loose baits into plastic or paper bags for placement in rodent burrows; and (4) removing baits that have not been touched by target rodents for relocation or disposal.

Frequency of handling activities and amount of product handled are expected to vary among handlers; some occupational handlers may use bromethalin products several times in a 90-day period resulting in possible intermediate-term exposures, while others may use bromethalin infrequently resulting in possible short-term exposures.

No data are currently available for any of the occupational handler exposure scenarios identified. It is unclear from labels and other available information the extent to which exposure is possible or likely during the activities associated with each exposure scenario.

Homeowner Handler Exposures

Because bromethalin products are available to homeowners, the Agency has determined that there is potential for exposure to applicators or other residential handlers during typical use-patterns associated with bromethalin. Specifically, the Agency is concerned about accidental oral and inhalation exposures to homeowner handlers during the loading and application of bromethalin at bait stations.

Residential handlers are expected to have fewer than seven days of exposure during a 90-day period.

Based on the use patterns and potential exposures described above, four major handler exposure scenarios were identified for residential handlers of bromethalin: (1) placing bait packs and bait cups at bait stations; (2) loading or recharging bait stations and bait trays with loose meal baits or bait pellets; (3) putting loose baits into plastic or paper bags for placement in rodent burrows; and (4) removing baits that have not been touched by target rodents for relocation or disposal.

No data are currently available for any of the homeowner handler exposure scenarios identified. It is unclear from labels and other available information the extent to which exposure is possible or likely during the activities associated with each exposure scenario.

(b) Post-Application Exposures and Assumptions

The Agency has determined that there is a potential for exposure to residential and others following applications of bromethalin, particularly in residential areas. the Agency has special

concerns about possible post-application exposures if (1) baits are not placed out of reach of children or are not placed in tamper-resistant bait stations as specified in product labeling; (2) baits are available to homeowners in packages which are not child resistant and could be accessible to children; or (3) baits are brightly colored or packaged in a way in which they could be appealing to children or mistaken by children for food or candy.

Occupational Post-Application Exposures

The Agency has determined that there is potential for occupational post-application exposure to bromethalin. Accidental exposures may occur in a variety of industrial and other occupational settings if bromethalin baits have not been applied in tamper-resistant bait stations or ready-to-use packages and workers come into contact with or handle the bait material. Because exposures of this nature are expected to be infrequent and relatively short in duration, at this time the Agency does not expect such exposures to significantly affect worker risk. Furthermore, based on available incident data, the Agency believes it is unlikely that adult workers mistake bromethalin baits for food.

Residential Post-Application Exposures

The Agency has determined that the potential for post-application residential exposure exists following residential applications made either by users or professional pest control operators (PCOs).

For adults, the Agency has determined that there is potential for user post-application exposure to bromethalin for situations similar to those described above for workers. Accidental exposures may occur following applications in residential settings if baits have not been applied in tamper-resistant or child resistant bait stations and consumer handle or otherwise come in contact with bait material, or if adults in residential settings mistake bromethalin baits for food. For the reasons described above for workers, the Agency does not expect such post-application exposure scenarios to pose a significant risk to an adult user, but recommends confirmation from the registrant(s).

The Agency has special concerns, however, about possible post-application exposures to children if (1) baits are not placed out of reach of children or are not applied in tamper-resistant or child resistant bait stations as specified in product labeling; and (2) baits are brightly colored or packaged in a way in which they could be appealing to children or be mistaken by children for food or candy. These concerns are supported by the high number of accidental child ingestion incidents relative to the number of adult ingestion incidents for rodenticide baits in general, and for bromethalin specifically.

(c) Occupational and Residential Risk Characterization

Calculations of daily dose of bromethalin are used to assess occupational and residential risks resulting from bromethalin use. Because the Agency currently has no data on occupational or residential exposures to bromethalin, the Agency is unable to calculate daily doses.

The Agency has risk concerns for persons exposed to bromethalin in both occupational and residential scenarios. These concerns are based on (1) very high acute toxicity (category I for acute oral toxicity); (2) very low short-term and intermediate-term NOELs (0.1 mg/kg/day and 0.025 mg/kg/day respectively); (3) the potential for acute, short-term, and intermediate-term exposures for occupational handlers, and for acute and short-term homeowner exposures; (4) a relatively high number of incidents associated with rodenticide baits in general; and (5) an absence of exposure data for all exposure scenarios considered.

(4) Chlorophacinone Occupational and Residential Exposure

At this time some products containing chlorophacinone are intended primarily for homeowner use and some are intended primarily for occupational use.

(a) Handler Exposures & Assumptions

EPA has determined that there is a potential exposure to applicators or other handlers during typical use-patterns associated with chlorophacinone. Specifically, EPA is concerned about potential dermal and inhalation exposures to handlers during the mixing of concentrate into baits and loading and application of chlorophacinone.

Because the vapor pressure of chlorophacinone is low (3.6×10^{-6} Torr), the potential for exposure resulting from inhalation of chlorophacinone vapors is not a significant concern despite a very low LC_{50} (0.007 mg/L). However, if fine particles become airborne during the handling of chlorophacinone baits, individuals may inhale these particles. Because these particles could potentially be ingested, such exposure would contribute to the individual's risk resulting from accidental ingestion/oral exposure.

Based on the use patterns and potential exposures described above, eight major handler exposure scenarios were identified for chlorophacinone: (1) mixing concentrate into baits (if end-use products which are concentrates that are intended to be mixed with food based do not exist, then this scenario can be eliminated), (2) placing bait packs; (3) loading bait boxes or bait stations with meal bait, grain bait, bait pellets, or other food-based bait from larger containers; (4) breaking paraffinized slabs, cakes, and blocks into pieces and placing the pieces in bait stations; (5) securing large paraffin blocks in bait stations in sewers; (6) applying bait by hand; (7) applying bait (e.g., pellets) in broadcast treatments using ground equipment; and (8) pouring and applying tracking powders (For some workers involved in major applications, exposure could last 8 hours a day, 5 days a week), and (9) spray application in orchards at 0.2 lb a.i./acre.

It is unclear from labels and other available information (1) the extent to which it is necessary, due to size or design of packages, for handlers to directly handle or contact the bait during bait station loading (which may result in dermal exposures); or (2) the extent to which it is possible for dusts associated with meal baits, grain baits, tracking powders, or pellets to result in inhalation exposure to handlers during bait station loading.

(b) Post-Application Exposures & AssumptionsOccupational and Residential

EPA has determined that there is a potential for exposure to consumers and others following applications of chlorophacinone, particularly in residences. EPA has concerns about possible post-application exposures if (1) baits are not placed out of reach of children or are not placed in tamper-resistant bait stations, as specified in labeling; (2) baits are available to consumers in packages which are not tamper resistant and could be accessible to children prior to application; and (3) baits are brightly colored or packaged in a way in which they could be appealing to children or mistaken by children for food or candy. These factors, among others, can be expected to lead to numerous exposures among small children. Under Note to Physicians, many of the labels recommend that Vitamin K₁ be administered intravenously (IV) or intramuscularly (IM). The veterinary literature states that vitamin K₁ can cause anaphylactic reactions if given IV and extensive hemorrhage after IM administration. Sheldon Wagner, M.D., a consultant to OPP, confirmed that Vitamin K₁ should not be given IV unless there is a hemorrhagic crisis. IM administration is normally acceptable in humans. The recommendation for IV administration should be deleted from the label.

(5) Diphacinone and its sodium salt Occupational and Residential Exposure

Because EPA currently has no data on occupational or residential exposures to diphacinone, the Agency is unable to calculate daily doses. EPA has risk concerns for persons exposed to diphacinone in both occupational and residential scenarios. These concerns are based on (1) very high acute toxicity (short- and intermediate - term NOEL of 0.1 mg/kg/day based on developmental toxicity); (2) potentially high (e.g., 100 percent) dermal absorption values; (3) an absence of exposure data for all exposure scenarios considered; and (4) a relatively high number of incidents associated with diphacinone use as compared to non-anticoagulant pesticides.

(a) Handler Exposures & Assumptions

There are no exposure data currently available for calculating risks to handlers resulting from exposures to diphacinone. However, the Agency has several concerns about the risks to handlers of diphacinone products, particularly commercial handlers (1) handling large quantities of product, (2) handling dusty, non-paraffinized products, including the concentrate and tracking powder formulations, or (3) applying products by hand.

The Agency recommends that all labels for occupational-use products require commercial handlers to wear gloves while handling all diphacinone formulations that are not contained in a tamper-resistant bait stations or in place packs. This would reduce dermal exposure to diphacinone and diminish the potential oral exposure that could result from hand-to-mouth transfer. Though no exposure data are available, the Agency believes that both tamper-proof bait stations and place packs greatly reduce the potential for dermal contact with diphacinone.

In addition, the Agency recommends that occupational handlers (commercial applicators) wear protective eyewear and a dust/mist respirator when handling diphacinone powder or other non-paraffinized diphacinone formulation, such as meal or grain-based baits, unless those formulations are contained in tamper-resistant bait stations or place packs. The eyewear and respirator would reduce the possibility of inhalation and ingestion of dusts resulting from the pouring and application of these products and reduce the potential ocular exposure that could result from contact with such dusts.

(b) Post-Application Exposures & Assumptions

There are no data currently available to address post application exposure for diphacinone. Only the following rough calculations are possible.

The dose a 10 kg child could receive from a 43 gram packet (average packet size) of diphacinone at (0.005%) equals 0.215 mg/kg. Assuming a NOEL of 0.13 mg/kg, this exposure will result in a Margin of Exposure (MOE = NOEL/Exposure) of 0.6, more than 167 fold less than the acceptable MOE of 100.

3. Risk Assessment

a. Occupational and Residential

The Agency has determined that there is a potential exposure to applicators and other handlers during typical use patterns associated with these chemicals. Specific concerns are those of dermal and inhalation exposure to handlers during the loading and application of the chemicals. The Agency is therefore recommending that gloves be worn when handling formulations not already contained in tamper-resistant bait stations or place packs. In addition the Agency is requiring all those who handle powder formulations or any other non-paraffinized formulations to wear a dust mask or respirator and protective eyewear during open pouring and application.

The Agency has special concerns, however, about possible post-application exposures to children if (1) baits are not placed out of reach of children or are not applied in tamper-resistant or child resistant bait stations as specified in product labeling; and (2) baits are brightly colored or packaged in a way in which they could be appealing to children or be mistaken by children for food or candy. These concerns are supported by the high number of accidental child ingestion incidents relative to the number of adult ingestion incidents for rodenticide baits in general, and for bromethalin specifically.

EPA is concerned about the continued risk of human exposure, especially to children, to rodenticides used in residential settings. In fact, EPA has gone on record, over the years, to express its concern regarding human exposures and incidents to rodenticides used in and around the home. PR Notice 94-7, Label Improvement Program for the Revision of Use Directions for Commensal Rodenticides and Statement of the Agency's Policies on the Use of Rodenticide Bait Stations, issued by the Agency on September 16, 1994, required registrants of certain rodenticide

products claimed to control commensal rodents to revise the labeling of such products to bear certain statements concerning “tamper-resistant bait stations.” It also informed rodenticide registrants, applicants, and other interested persons of EPA’s continued concern for the safe use of rodenticides. Moreover, PR Notice 94-7 outlined EPA’s policies regarding the isolation of commensal rodenticides from children, dogs, other pets, domestic animals, and non-target wildlife. PR Notice 94-7, in part, stated the following:

“Historically, more than 1000 incidents of human exposure to rodent poisons have been reported annually in the U.S. Numbers of human incidents reported have increased greatly in recent years with the advent of a new reporting network. In 1988, more than 10,000 rodenticide incidents were reported in the American Association of Poison Control Center’s National Data Collection System. Nearly 90% of these cases involved children under six years of age. Nearly all of such exposures are classed as accidents. The human exposure incidents that are reported may represent less than half of those which occur. Well over 80% of reported human rodenticide exposures involve anticoagulant compounds.

Young children thought to have been exposed to rodenticides are often given some medical attention, although symptoms of poisoning usually are not observed, especially in cases involving anticoagulants which act very slowly. Although young children have been killed by rodenticides, most rodenticide-related deaths of humans result from intentional ingestions by persons much older than five years of age.

While reports summarizing incidents typically do not indicate exactly how exposures have occurred, it is likely that most accidents are related to improper use rather than to improper storage. Accidents of both types are preventable. EPA believes that the large numbers of exposure incidents provide evidence that current policies for promoting bait protection have not been sufficient and, therefore, that tougher, more explicit policies are needed. EPA has not been persuaded by contentions that the relatively low incidences of serious human illnesses caused by accidental exposures to compounds such as warfarin justify selective relaxations of requirements for bait protection...”

Based on available data, young children experience excessive exposures to anticoagulant rodenticides. An analysis of pesticide ingestions in 1989 in children less than 6 years of age compared the number of ingestions to the number of containers reported in U.S. homes in 1990. When 83 active ingredients were ranked, the top 5 products responsible for childhood ingestion per 1000 containers were all anticoagulant rodenticides. The ratio of cases for these rodenticide baits was up to a 100 times higher than the median for all pesticides.

A relatively large percentage of children accidentally exposed to anticoagulant rodenticides are treated in health care facilities. For 99 percent of all cases, however, only minor or no adverse health effects are reported. In some published reports, it has been claimed that children exposed to anticoagulants often are given unnecessary treatments as a precautionary measure. Over several years, some 36 percent of the victims of all anticoagulant rodenticide cases reported to poison control centers are brought to health care facilities for treatment.

Furthermore, rodenticides are acutely toxic to humans. Margins of Exposures (MOEs), when bait is ingested, are less than one. Generally, the Agency considers a MOE of 100 or above to be protective of the public’s health. The Agency, for example, has calculated the dose a 10 kg child receives from a 43 gram packet (standard commercial package). The Agency’s calculation resulted in a MOE of 0.6 (using the diphacinone NOEL of 0.13 mg/kg).

Rodenticides, when used as currently sold and marketed, are responsible for a high number of accidental exposures each year. In the recent past, poison control centers have enhanced their ability to capture incident data. Even with improved data collection, the high number of human unintentional or accidental exposures to rodenticides remain constant each year, or may be increasing. From the number of exposures to children, it is clear that children under six years-old are disproportionately more at risk to the continued use of these products in and around the home. Based on these facts, EPA is concerned regarding the risk of exposure to these chemicals to the public, particularly children.

Ingestion of an entire 43 gram packet by a one year old is unlikely. Poisoning specialists estimate the risks to children by assuming a one year old child weighing 10 kg would get one swallow (approximately 5 grams). This provides an estimated dose of 500 mg/kg. For diphacinone and other anticoagulants formulated at 0.005% active ingredients, the dose would be 0.025 mg/kg. Therefore, the margin of exposure from the lowest dose causing clinical effects in adults (0.1 mg/kg) to the dose if a child consumed one swallow (0.1/0.025) would be 4.0. In other words, if a child consumed four swallows, the child would be expected to experience clinical effects. Note this assumes that children are no more sensitive to anticoagulants than adults, which may not be the case.

1995 data collected by the American Association of Poison Control Centers (AAPCC) show 17,187 human exposures to all rodenticides. Of these numbers, 14,710 (~86%) exposures were attributed to the anticoagulant rodenticides. Of concern to EPA is the number of exposures to children less than six years-old; in 1995, there were a total of 14,900 or approximately 87% of the total exposures. Six thousand four hundred and fifty (6,450) of the total number of human exposures to rodenticides, were significant enough to result in treatment at a health care facility.

1996 data collected by the AAPCC indicate that 17,601 rodenticide exposures occurred to humans. The anticoagulant rodenticides (brodifacoum, bromadiolone, chlorophacinone, diphacinone and its sodium salt, and pival and its sodium salt), accounted for 14,836 or over 84% of the total exposures. Of these exposures, 13,362 (90%) occurred in children less than six years-old. Approximately 5,300 exposures resulted in people seeking treatment at a health care facility.

C. Environmental Assessment

1. Ecological Toxicity Data

Primary toxicity to mammals is very high for all five of these rodenticides. Primary toxicity to birds is high to very high for the single-feeding compounds (brodifacoum, bromadiolone, bromethalin) but mostly moderate for the multiple-feeding compounds (diphacinone, chlorophacinone). Toxicity to aquatic organisms ranges from moderate to very high.

Some secondary toxicity data exist for avian and mammalian predators and/or scavengers for some but not all of these rodenticides. These studies are required to support rodenticides used

in the field and around buildings in non-urban (i.e., rural, suburban areas). The available laboratory and/or field data indicate that rodents poisoned with brodifacoum or bromadiolone baits can kill avian and mammalian secondary consumers. Sufficient data also exist to indicate that 0.01% a.i. diphacinone bait is secondarily hazardous to birds and mammals and that 0.01% a.i. chlorophacinone bait is hazardous to mammalian predators. Avian data are not available for 0.01% a.i. chlorophacinone bait. Adequate secondary data are not available for birds and mammals for 0.005% a.i. chlorophacinone and diphacinone bait or bromethalin and is being required in this RED. These data are required to support all uses except those bait placements limited to indoors and immediately against the outside walls of buildings.

a. Toxicity to Terrestrial Animals

(1) Birds, Acute and Subacute

(a) Brodifacoum - Birds, Acute and Subacute

An acute oral toxicity study using the technical grade of the active ingredient (TGAI) is required to establish the toxicity of brodifacoum to birds. The preferred test species is either mallard duck (a waterfowl) or bobwhite quail (an upland gamebird). Results of this test are summarized in Table 29 below.

Table 29 - Brodifacoum Avian Acute Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg)	Toxicity Category	MRID No. Author, Year	Study Classification ¹
Mallard duck (<i>Anas platyrhynchos</i>)	97.6	0.26	Very highly toxic	41563303 Ross, 1980	Core

¹Core (study satisfies guideline). Supplemental (study is scientifically sound, but does not satisfy guideline)

Since the LD₅₀ falls two orders of magnitude below the 10 mg/kg standard, brodifacoum is very highly toxic to avian species on an acute oral basis. The guideline (71-1) is fulfilled (MRID 41563303).

Two subacute dietary studies using the TGAI are required to establish the toxicity of brodifacoum to birds. The preferred test species are the mallard duck and bobwhite quail. Results of these tests are summarized in Table 30 below.

Table 30 - Brodifacoum Avian Subacute Dietary Toxicity

Species	% a.i.	40-Day LC ₅₀ (ppm) ¹	Toxicity Category	MRID No. Author, Year	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	97.6	0.8	Very Highly Toxic	124477 Fink, 1978	Core
Mallard duck (<i>Anas platyrhynchos</i>)	97.6	2	Very Highly Toxic	124476 Fink, 1978	Core

¹Test organisms observed an additional three days while on untreated feed.

Since the LC_{50} is an order of magnitude less than 10 ppm, brodifacoum is very highly toxic to avian species on a subacute dietary basis. The guideline (71-2) is fulfilled (MRIDs 124477 and 124476).

(b) Bromadiolone - Birds, Acute and Subacute

An acute oral toxicity study using the technical grade of the active ingredient (TGAI) is required to establish the toxicity of bromadiolone to birds. The preferred test species is either mallard duck (a waterfowl) or bobwhite quail (an upland gamebird). Results of this test are summarized in Table 31 below.

Table 31 - Bromadiolone Avian Acute Oral Toxicity

Species	% a.i.	LD_{50} (mg/kg)	Toxicity Category	MRID Author, Year	Study Classification
Northern Bobwhite (<i>Colinus virginianus</i>)	99.75	170	Moderately toxic	257770 Roth, 1985	Core
Northern Bobwhite	99.75	138	Moderately toxic	41707301 Shapiro	Core

Because the LD_{50} is in the range of 51 to 500 mg/kg, bromadiolone is considered moderately toxic to birds on an acute oral basis. The guideline (71-1) is fulfilled (MRID 257770, 417073-01)).

Two subacute dietary studies using the TGAI are required to establish the toxicity of bromadiolone to birds. The preferred test species are mallard duck and bobwhite quail. Results of these tests are summarized in Table 32 below.

Table 32 - Bromadiolone Avian Subacute Dietary Toxicity

Species	% a.i.	LC_{50} (ppm)	Toxicity Category	MRID Author, Year	Study Classification
Northern Bobwhite (<i>Colinus virginianus</i>)	99.75	37.6	Highly toxic	257770 Roth, 1985	Core
Mallard (<i>Anas platyrhynchos</i>)	99.75	158	Highly toxic	257770 Fletcher, 1985	Core
Mallard	94.4	440	Highly toxic	249995 Beavers, 1979	Core

Because the LC_{50} values are in the range of < 50 to 500 ppm, bromadiolone is highly to very highly toxic to birds on a subacute dietary basis. The guideline requirements are fulfilled (MRID 257770, 249995).

(c) Bromethalin - Birds, Acute and Subacute

An acute oral toxicity study using the technical grade of the active ingredient is required to establish the toxicity of bromethalin to birds. The preferred test species is either the mallard duck or the bobwhite quail. Results from these tests are summarized in Table 33 below.

Table 33 -Bromethalin Avian Acute Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg)	Toxicity Category	MRID Author, Year	Study Classification
Bobwhite quail (<i>Colinus virginianus</i>)	96.3	4.6	Very highly toxic	246173 van Lier, 1981	Core
Bobwhite quail	96.3	11.0	Highly toxic	86741 van Lier, 1981	Core

These results indicate that bromethalin is highly to very highly toxic to birds on an acute oral basis. The guideline requirement (71-1) is fulfilled (MRIDs 246173, 86741, and 86745).

Two subacute dietary studies using the technical grade of the active ingredient are required to establish the toxicity of bromethalin to birds. The preferred test species are mallard duck (a waterfowl) and bobwhite quail (an upland gamebird). Results of these tests are summarized in Table 34 below.

Table 34 - Bromethalin Avian Subacute Dietary Toxicity

Species	% a.i.	LC ₅₀ (ppm)	Toxicity Category	MRID Author, Year	Study Classification
Bobwhite quail (<i>Colinus virginianus</i>)	96.3	210	Highly toxic	86745 van Lier, 1981	Core
Mallard duck (<i>Anas platyrhynchos</i>)	96.3	620	Moderately toxic	26526 van Lier, 1981	Core

These results indicate that bromethalin is moderately to highly toxic to avian species on a subacute dietary basis. The guideline requirement (71-2) is fulfilled (MRID 86745 and 26526).

(d) Chlorophacinone - Birds, Acute and Subacute

An acute oral toxicity study using the technical grade of the active ingredient (TGAI) is required to establish the toxicity of chlorophacinone to birds. The preferred test species is either mallard duck (a waterfowl) or bobwhite quail (an upland gamebird). Results of this test are listed in Table 35 below.

Table 35 - Chlorophacinone Avian Acute Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg) ¹	Toxicity Category	MRID No. (Author/Year)	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	100	258 ²	moderately toxic	41513101 (Fletcher and Pedersen 1989)	core

¹ birds were observed for 30 days after dosing

² all mortality (28 of 50 birds dosed) occurred within 5 days

Because the LD₅₀ is in the range of 51 to 500 mg/kg, chlorophacinone is considered moderately toxic to birds on an acute oral basis. The guideline (71-1) is fulfilled (MRID 41513101).

Two subacute dietary studies using the TGAI are required to establish the toxicity of chlorophacinone to birds. The preferred test species are mallard duck and bobwhite quail. Results of these tests are summarized in Table 36 below.

Table 36 - Chlorophacinone Avian Subacute Dietary Toxicity

Species	% a.i.	5-Day LC ₅₀ (ppm) ¹	Toxicity Category	MRID No. (Author/Year)	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	100	56 ²	highly toxic	41513102 (Fletcher and Pedersen 1989)	core
Mallard duck (<i>Anas platyrhynchos</i>)	100	172 ³	highly toxic	41513103 (Fletcher and Pedersen 1989)	core

¹ birds were observed an additional 25 days while on untreated feed

² all mortality (37 of 60 birds dosed) occurred within 9 days

³ all mortality (28 of 60 birds dosed) occurred within 22 days

Because the LC₅₀ values are in the range of 50 to 500 ppm, chlorophacinone is considered highly toxic to birds on a subacute dietary basis. The guideline (71-2) is fulfilled (MRIDs 41513102, 41513103).

(e) Diphacinone and its sodium salt - Birds, Acute and Subacute

An acute oral toxicity study using the technical grade of the active ingredient (TGAI) is required to establish the toxicity of diphacinone to birds. The preferred test species is either mallard duck (waterfowl) or bobwhite quail (upland gamebird). Results of this test are summarized below.

Table 37 - Diphacinone and its sodium salt Avian Acute Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg) ¹	Toxicity Category	MRID No. (Author/Year)	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	96.9	400 < LD ₅₀ < 2000	moderately toxic	42245201 (Campbell et al. 1991)	supplemental

¹ quail were observed for 21 days after a single oral dose

A reliable LD₅₀ was not determined in this study. The 95% confidence interval ranged from 0 to ∞, in part because test concentrations were separated by a factor of 5X rather than the 1.6X separation recommended in the study guideline. Visual inspection of the data indicate that the LD₅₀ is less than 2000 mg/kg but greater than 400 mg/kg. Therefore, until an adequate study is submitted, 400 mg/kg will be used as a conservative estimate of the LD₅₀. The guideline (71-1) is not fulfilled.

Two subacute dietary studies using the TGAI are required to establish the toxicity of diphacinone to birds. The preferred test species are mallard duck and bobwhite quail. Results of these tests are summarized in Table 38 below.

Table 38 - Diphacinone and its sodium salt Avian Subacute Dietary Toxicity

Species	% a.i.	5-Day LC ₅₀ (ppm) ¹	Toxicity Category	MRID No. (Author/Year)	Study Classification
Northern bobwhite quail (<i>Colinus virginianus</i>)	96.9	> 5000 ²	practically nontoxic	42408801 (Long et al. 1992)	core
Mallard duck (<i>Anas platyrhynchos</i>)	96.9	906 ³	moderately toxic	42408802 (Long et al. 1992)	core

¹test organisms (10/level; 6 test concentrations, 3 control groups) were observed an additional 20 days while on untreated feed.

²all mortality (10% at 5000 ppm, 30% at 1667 ppm, and 10% at 185 ppm) occurred within 18 days.

³ all mortality (20 of 60 birds dosed) occurred within 16 days.

Because the lowest LC₅₀ value is between 501 to 1000 ppm, diphacinone is considered moderately toxic to birds on a subacute dietary basis. The guideline (71-2) is fulfilled (MRID 42408801, 42408802).

(2) Birds, Chronic Toxicity

Avian reproduction studies are not required for these rodenticides, except for one product. Chronic exposure of birds is not expected for rodenticides used inside and along the outside walls of buildings. Only chlorophacinone and diphacinone have field uses, but applications are either made outside the avian breeding season or bait is applied in enclosed bait stations or other sites (e.g., rodent burrows) inaccessible to nontarget wildlife. The one exception is chlorophacinone product CA890023. Its use according to label directions could subject birds to repeated or continuous exposure during or preceding the breeding season, because it allows an uninterrupted supply of unprotected bait to be maintained for up to four weeks.

(3) Mammals

Wild mammal testing is required on a case-by-case basis, depending on the results of lower tier laboratory mammalian studies, intended use pattern, and pertinent environmental fate characteristics. In most cases, rat or mouse toxicity values obtained from the Agency's Health Effects Division (HED) substitute for wild mammal testing. These toxicity values are reported in Tables 39 through 43 below.

(a) Brodifacoum - Mammals, Acute and Chronic

Table 39 - Brodifacoum Mammalian Acute Oral Toxicity

Species Study Duration	% a.i.	Toxicity Value	MRID No.
Laboratory rat (<i>Rattus norvegicus</i>)	97.6	♂ 0.418 mg/kg ♀ 0.561 mg/kg	426875

Since the acute and dietary toxicities are much less than 10 mg/kg, brodifacoum is very highly toxic to mammals on an acute and a dietary basis.

(b) Bromadiolone Mammals, Acute and Chronic

Table 40 - Bromadiolone Mammalian Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg)	Toxicity Category	MRID	Study Classification
White lab rat (<i>Rattus norvegicus</i>)	0.005	1.1 (female)	Very highly toxic	226423	Supplemental
Substitute for wild rodents	1.0	60 (TEP?)	Moderately toxic	241703	Minimum
White lab mice (House mouse, <i>Mus musculus</i>)	Doc.# 007425	1.75	Very highly toxic	007425	Minimum
Substitute for wild rodents	2.5 g/l	.56 -.84	Very highly toxic	009423	Minimum
Beagle dogs Substitute for wild canids 90 day gavage	Unknown	(in µg/kg/day) NOEL = 8 4 of 6 died @ 20 6 of 6 died @ 50	n/a	254001 Chempar, 1981	Supplemental
Beagle dogs Maximum tolerated dose	Unknown	10 mg/kg	n/a	254000 Chabert, 1975	Not rated
Cat - Substitute for wild felids Maximum tolerated dose (Continued)	Unknown	25 mg/kg	n/a	254000 Chabert, 1975	Not rated
Pig	Unknown	5 mg/pig/day killed 3 pigs in 8, 9 & 10 days	n/a	257769 Lyon Vet. School, 1984	Not rated
Ground squirrel	0.005%	Died	n/a	264384	Not rated

The available mammalian data indicate that bromadiolone is moderately to very highly toxic to mammals on an acute oral basis (MRID 226423 and 241703).

(c) Bromethalin - Mammals, Acute and Chronic Toxicity

Table 41 - Bromethalin Mammalian Oral Toxicity

Species	% a.i.	Test type	LD ₅₀ (mg/kg)	Classification	Toxicity Category	MRID
Laboratory rat (<i>Rattus norvegicus</i>)	TGAI in Acacia 0.005%	Acute oral	♀ = 9.1 ♂ = 10.7	Minimum	Very highly toxic	241521
Laboratory rat	TGAI in Acacia 0.005%	Acute oral	♀ = > 500 (> 2.5 a.i.)	Minimum	Very highly toxic	246172
Laboratory Mouse (<i>Mus musculus</i>)	TGAI in PEG-200	Acute oral	♀ = 8.1 ♂ = 5.3	Minimum	Very highly toxic	241521
Laboratory Mouse	TGAI in Acacia	Acute oral	♀ = 28.9 ♂ = 35.9	Minimum	Very highly toxic	241521
House cat (<i>Felis domesticus</i>)	TGAI in PEG-200	Acute oral	18	Minimum	Highly toxic	241521
Domestic dog (<i>Canis familiaris</i>)	TGAI in PEG-200	Acute oral	4.8	Minimum	Very highly toxic	241521

The results indicate that bromethalin is highly to very highly toxic to small mammals on an acute oral basis.

(d) Chlorophacinone - Mammals, Acute and Chronic Toxicity

Table 42 - Chlorophacinone Mammalian Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg)	Toxicity Category	MRID No.
Laboratory rat (<i>Rattus norvegicus</i>)	100	6.2 ^{1,2}	Very highly toxic	418753-01

¹ ♂ = 3.15 mg/kg, ♀ = 10.95 mg/kg

² mortalities occurred 4 to 9 days after treatment

The results indicate that chlorophacinone is very highly toxic to small mammals on an acute oral basis.

(e) Diphacinone and its sodium salt - Mammals, Acute and Chronic Toxicity

Table 43 - Diphacinone and its sodium salt Mammalian Oral Toxicity

Species	% a.i.	LD ₅₀ (mg/kg)	Toxicity Category	MRID No.
Laboratory rat (<i>Rattus norvegicus</i>)	96.9	7.0	very highly toxic	422452-02
Coyote (<i>Canis latrans</i>)	not reported	0.6	very highly toxic	(Savarie et al. 1979) ¹
Mongoose (<i>Herpestes auropunctatus</i>)	not reported	0.2	very highly toxic	(DWRC) ²

¹reported by the Denver Wildlife Research Center (Savarie et al. 1979, ASTM STP 693, pp. 69-79)

²reported by the Denver Wildlife Research Center in EUP application for mongoose control in Hawaii

These results indicate that diphacinone is very highly toxic to mammals.

b. Toxicity to Aquatic Animals

(1) Toxicity to Freshwater Fish

Two freshwater fish toxicity studies using the TGAI are required to establish the toxicity of brodifacoum to fish. The preferred test species are rainbow trout (a coldwater fish) and bluegill sunfish (a warmwater fish). Results of these tests are summarized in Tables 44 through 48 below.

(a) Brodifacoum - Freshwater Fish Acute Toxicity

Table 44 - Brodifacoum Freshwater Fish Acute Toxicity (Flow through)

Species	% a.i.	96-hour LC ₅₀ (ppm)	Toxicity Category	MRID No. Author, Year	Study Classification
Rainbow trout (<i>Oncorhynchus mykiss</i>)	97.6	0.015 measured stock	Very Highly Toxic	088011 Hill, 1976	Supplemental, but satisfies the requirement
Bluegill sunfish (<i>Lepomis macrochirus</i>)	97.6	0.025 measured stock	Very Highly Toxic	124472 Hill, 1978	Supplemental, but satisfies the requirement

Since the LC_{50} is in the range 0.1 to 1 ppm for the bluegill and is an order of magnitude less than 0.1 ppm for the trout, brodifacoum is highly toxic to very highly toxic to freshwater fish on an acute basis. Although all the studies were "supplemental," they were accepted as fulfilling the Guidelines' requirement (72-1), because of the use pattern and the extremely low solubility of brodifacoum (MRID 088011, 124474, and 124473).

(b) Bromadiolone - Freshwater Fish Acute Toxicity

Table 45 - Bromadiolone Freshwater Fish Acute Toxicity

Species	% a.i.	LC_{50} ppm a.i.	MRID	Toxicity Category	Study Classification
Rainbow trout	94.4	0.24	232567 Stiefer, 1978	Moderate	Fulfills Guideline Requirement
Bluegill sunfish	94.4	3.0	232567 Stiefer, 1978	Moderate	Fulfills Guideline Requirement

The results of the 96-hour bluegill sunfish and rainbow trout acute toxicity studies indicate that bromadiolone is moderately toxic to fish. The guideline requirements are fulfilled (MRID 232567).

(c) Bromethalin Freshwater Fish Acute Toxicity

Table 46 - Bromethalin Freshwater Fish Acute Toxicity

Species	% a.i.	LC_{50} (ppb)	Toxicity Category	MRID	Author, Year	Study Classification
Bluegill sunfish (<i>Lepomis macrochirus</i>)	99	598	Very highly toxic	42733501	Conner, 1993	Supplemental
Rainbow trout (<i>Oncorhynchus mykiss</i>)	99	38	Very highly toxic	42733502	Conner, 1993	Supplemental

These results indicate that bromethalin is very highly toxic to freshwater fish on an acute basis. The guideline requirement (72-1) is fulfilled (MRID 42733501 and 42733502).

(d) Chlorophacinone - Freshwater Fish Acute Toxicity

Table 47 - Chlorophacinone Freshwater Fish Acute Toxicity*

Species	% a.i.	96-hour LC_{50} (ppb)	Toxicity Category	MRID No. (Author/Year)	Study Classification
Rainbow trout (<i>Oncorhynchus mykiss</i>)	100	450	highly toxic	42356103 (Machado 1992)	core
Bluegill sunfish (<i>Lepomis macrochirus</i>)	100	710	highly toxic	42356102 (Machado 1992)	core

*Using flow-through (measured) testing

Because the LC_{50} falls in the range of 100 to 1000 ppb, chlorophacinone is considered highly toxic to freshwater fish on an acute basis. The guideline (72-1) is fulfilled (MRID 42356102, 42356103).

(e) Diphacinone and its sodium salt - Freshwater Fish Acute Toxicity

Table 48 - Diphacinone and its sodium salt Freshwater Fish Acute Toxicity*

Species	% a.i.	96-hour LC ₅₀ (ppm)	Toxicity Category	MRID No. (Author/Year)	Study Classification
Rainbow trout (<i>Oncorhynchus mykiss</i>)	95.8	2.6	moderately toxic	43249502 (Machado 1994)	core
Bluegill sunfish (<i>Lepomis macrochirus</i>)	95.8	7.5	moderately toxic	43249501 (Machado 1994)	core

*Using flow-through (measured) testing

Because the LC₅₀ falls in the range of 1 to 10 ppm, diphacinone is considered moderately toxic to freshwater fish on an acute basis. The guideline (72-1) is fulfilled (MRID 42356102, 42356103).

(2) Toxicity to Freshwater Invertebrates

(a) Brodifacoum - Acute Toxicity to Freshwater Invertebrates

A freshwater aquatic invertebrate toxicity test using the TGAI is required to establish the toxicity of brodifacoum to aquatic invertebrates. The preferred test species is *Daphnia magna*. Results of this test are summarized in Table 49 below.

Table 49 - Brodifacoum Freshwater Invertebrate Acute Toxicity

Species	% a.i.	48-hour LC ₅₀ /EC ₅₀ (ppm)	Toxicity Category	MRID No. Author, Year	Study Classification
Waterflea (<i>Daphnia magna</i>) Static	97.6	0.98 nominal	Highly Toxic	128442 Gerry, 1978	Supplemental, but satisfies requirements

Since the LC₅₀ falls in the range 0.1 to 10 ppm, brodifacoum is Highly Toxic to aquatic invertebrates on an acute basis. Although the study was "Supplemental," it was accepted as fulfilling the Guidelines' requirement (72-1), because of the use pattern and the extremely low solubility of brodifacoum (MRID 128442).

(b) Bromadiolone-Acute Toxicity to Freshwater Invertebrates

The minimum testing required to assess the hazard of a pesticide to freshwater invertebrates is a freshwater aquatic invertebrate toxicity test, preferably using first instar *Daphnia magna* or early instar amphipods, stoneflies, mayflies, or midges. The available information is summarized in Table 50 below.

Table 50 - Bromadiolone Freshwater Invertebrate Acute Toxicity

Species	% a.i.	EC ₅₀ (ppm)	Toxicity Category	MRID Author, Year	Study Classification
Waterflea (<i>Daphnia magna</i>)	Unknown	0.24	Highly toxic	232567 LeBlanc, 1977	Core
Waterflea	98.7	2	Moderately toxic	420933-02 Boeri, 1991	Core

Because the EC₅₀ falls in the range of 0.1 to 10 ppm, bromadiolone is considered moderately to highly toxic to freshwater invertebrates on an acute basis. The guideline requirement is fulfilled (MRID 232567, 420933-02).

(c) Bromethalin - Acute Toxicity to Freshwater Invertebrates

A freshwater aquatic invertebrate toxicity test using the technical grade of the active ingredient is required to establish the toxicity of bromethalin to invertebrates. The preferred test species is *Daphnia magna*. Results of this test are summarized in Table 51 below.

Table 51 - Bromethalin Freshwater Invertebrate Acute Toxicity

Species	% a.i.	EC ₅₀ (ppb)	Toxicity Category	MRID Author, Year	Study Classification
Waterflea (<i>Daphnia magna</i>)	96.3	2.0	Very highly toxic	86751 van Lier, 1981	Supplemental
Waterflea	99	5.1	Very highly toxic	42733503 Conner, 1993	Supplemental

The results indicate that bromethalin is very highly toxic to aquatic invertebrates on an acute basis. The guideline requirement (72-2) is fulfilled (MRIDs 86751 and 42733503).

(d) Chlorophacinone - Acute Toxicity to Freshwater Invertebrates

A freshwater aquatic invertebrate toxicity test using the TGAI is required to establish the toxicity of chlorophacinone to aquatic invertebrates. The preferred test species is *Daphnia magna*. Results of this test are summarized in Table 52 below.

Table 52 - Chlorophacinone Freshwater Invertebrate Acute Toxicity*

Species	% a.i.	48-hour EC ₅₀ (ppb)	Toxicity Category	MRID No. (Author/Year)	Study Classification
Waterflea (<i>Daphnia magna</i>)	100	640	highly toxic	42356101 (Putt 1992)	core

*Using Flow-through (measured) testing

Because the EC₅₀ is between 100 to 1000 ppb, chlorophacinone is considered highly toxic to aquatic invertebrates. The guideline (72-2) is fulfilled (MRID 42356101).

(e) Diphacinone and its sodium salt - Acute Toxicity to Freshwater Invertebrates

A freshwater aquatic invertebrate toxicity test using the TGAI is required to establish the toxicity of diphacinone to aquatic invertebrates. The preferred test species is *Daphnia magna*. Results of this test are summarized in Table 53 below.

Table 53 - Diphacinone and its sodium salt Freshwater Invertebrate Acute Toxicity*

Species	% a.i.	48-hour EC ₅₀ (ppm)	Toxicity Category	MRID No. (Author/Year)	Study Classification
Waterflea (<i>Daphnia magna</i>)	98.7	1.8	moderately toxic	42282201 (Putt 1992)	core

*Using Flow-through (measured) testing

Because the EC₅₀ in the range of 1 to 10 ppm, diphacinone is considered moderately toxic to aquatic invertebrates on an acute basis. The guideline (72-2) is fulfilled (MRID 42282201).

c. Birds and Mammals, Secondary Toxicity Tests

The Agency requires data to determine if vertebrate pesticides labeled for outdoor use pose a hazard to secondary consumers. A whole body residue analysis with a target species is initially required to determine the toxicant load in the carcass of a primary consumer. If a significant toxicant load occurs, secondary poisoning studies with a mammalian predator and a predacious bird are required. If the toxicant load is not significant, the secondary studies are not required. For chlorophacinone, studies are required on the 0.005% a.i. bait only if a hazard exists for the 0.01% a.i. bait. The study in Table 54 was previously submitted.

Table 54 - Mammalian Secondary Toxicity

Species	Food/Test Material	Food Amount	Results	MRID No. (Author/Year)	Study Classification
Coyote (<i>Canis latrans</i>)	Ground squirrels poisoned with 0.01% Chlorophacinone bait over a 6-day period	1 dead ground squirrel/day for 5 consecutive days ¹	3 of 7 coyotes died (1 adult, 2 subadult) during the 30-day posttreatment period	427609-02 (Marsh and Howard 1986)	core

¹the coyotes were held an additional 30 days for observation

Three coyotes died from multiple feedings on ground squirrels poisoned with 0.01% a.i. bait. One of four adults died of internal hemorrhaging, whereas the other three remained healthy with no observable symptoms. Of the three subadults tested, two died of internal hemorrhaging; the survivor remained healthy. The amount of toxicant ingested secondarily was not determined. The study is adequate to indicate that rodents poisoned with 0.01% Chlorophacinone baits pose a secondary hazard to coyotes and presumably other mammalian carnivores and scavengers. No whole body residue analysis or avian data have been submitted.

Because the 0.01% a.i. bait resulted in secondary mortality to coyotes, a study is required using the 0.005% a.i. bait. The data requirement (70-A-SS) for a secondary poisoning study with

a mammal is fulfilled for the 0.01% a.i. bait (MRID 427609-02) but is outstanding for the 0.005% a.i. bait. The data requirements for a secondary poisoning study (70-B-SS) and whole body residues in a target species (70-C-SS) are not fulfilled for the 0.01% a.i. and 0.005% a.i. bait.

d. Terrestrial Field and Simulated Field Testing

The studies summarized in Table 55 below were submitted to support Chlorophacinone registrations for California ground squirrel control or for vole control in orchards.

Table 55 - Chlorophacinone Terrestrial and Simulated Field Tests

Target Species	Treatment	Nontarget Kill	MRID No. (Author/Year)	Study Classification
California Ground Squirrel (<i>Spermophilus beecheyi</i>)	0.01% a.i. and 0.005% a.i. grain baits	poisoning confirmed in 14/15 mice and 2/2 woodrats examined on 5 0.01% a.i. bait plots and 9/13 mice and 3/3 woodrats on 5 0.005% a.i. bait plots ¹	439222-01 (Baroch 1996)	supplemental ²
California Ground Squirrel	bait station with 0.005% a.i. grain bait	poisoning confirmed in 3/3 mice examined on 2 bait plots ¹	439222-02 (Baroch 1996)	supplemental ²
California Ground Squirrel	0.005% a.i. pelleted bait	poisoning confirmed in 2 dead rabbits (residue levels of 0.011 and 1.16 ppm in GI tract)	416493-01 (Poché 1991)	supplemental ²
Pine vole (<i>Microtus pinetorum</i>)	1 ground spray at 0.3 lb ai/acre	No mortality or adverse affects were observed in six captive opossums exposed for 14 days to sprayed ground vegetation in an orchard	234579 (Libke et al. 1972)	supplemental ³

¹poisoning was indicated by blue-dyed bait in the GI tract, blue stain in fatty tissues, subdermal hematomas, and/or internal hemorrhaging

²the study was an efficacy test that provided some information on nontarget hazards

³sample size (6 opossums) was small

The food bait studies were designed primarily to assess efficacy of 0.01% a.i. and 0.005% a.i. chlorophacinone baits to the California ground squirrel in the field. The orchard spray study was designed to determine if opossums exposed to sprayed ground vegetation in an orchard setting were adversely effected. All four studies were too limited in scope for a broad evaluation of the potential impacts of chlorophacinone on nontarget species. However, the information obtained indicates that chlorophacinone baits pose a primary risk to some nontarget species, especially granivorous rodents. In two of the food baiting studies (MRID Nos 43922201, 43922202), an effort was made to collect carcasses found during spot-baiting trials with 0.01% a.i. and 0.005% a.i. grain baits and a bait station trial in which 0.005% a.i. grain bait was available in bait stations. Based on the presence of blue dye incorporated into the bait and/or signs of internal or external hemorrhaging, 91% (130/143) of the ground squirrels recovered and 86% (31/36) of nontarget mice (*Peromyscus spp.*, *Perognathus inornatus*) and woodrats (*Neotoma fuscipes*) examined were poisoned. There was no evidence that the 4 rabbits (*Sylvilagus auduboni*), 2 pocket gophers (*Thomomys bottae*), or 1 mourning dove (*Zenaida macroura*) found were poisoned. Although no evidence was found to indicate that birds consumed baits or that avian and

mammalian predators and scavengers were adversely effected in any of these studies, none were designed to assess such risks. In another study (MRID No. 416493-01) designed to assess efficacy of 0.005% a.i. chlorophacinone bait against the California ground squirrel, two dead rabbits were recovered. Both had bait in the GI tract. How the rabbits were exposed is not known; presumably, they entered bait stations or gleaned spilled bait.

e. Birds and Mammals, Secondary Toxicity Tests

The Agency requires data to determine if vertebrate pesticides labeled for outdoor use pose a hazard to secondary consumers. A whole body residue analysis with a target species is required to determine the toxicant load in the carcass of a primary consumer. Secondary poisoning studies with a mammalian predator and a predacious bird are required only if a biologically significant toxicant load exists. The studies summarized in Table 56 below were previously submitted or published.

Table 56 - Diphacinone Avian and Mammalian Secondary Toxicity

Species	No. Tested	Food/ Test Material	Days Dosed	Results	MRID No. (Author/Year)	Study Classification
Barn owl (<i>Tyto alba</i>)	2	wild rats poisoned with 0.005% a.i. grain bait ¹ or deer mice poisoned with 0.01% a.i. grain bait ²	10	both barn owls survived with no apparent signs of intoxication; 2 great horned owls died after 14 days; the saw-whet owl died after 7 days ³	40077202 (Mendenhall and Pank 1980)	supplemental ⁴
Great-horned owl (<i>Bubo virginianus</i>)	3		10			
Saw-whet owl (<i>Aegolius acadicus</i>)	1		5			
Golden eagle (<i>Aquila chrysaetos</i>)	7	sheep muscle containing 2.7 ppm Diphacinone	5-10	all survived, but prothrombin times and hematocrit values were temporarily affected	(Savarie et al. 1979) ⁶	n/a
Rat (<i>Rattus norvegicus</i>)	72	muscle tissue from captive coyotes killed with a single oral dose	6	coyote muscle containing 0.5 ppm Diphacinone killed 4 of 8 rats; muscle with < 0.5 ppm Diphacinone caused no mortality	(Savarie et al. 1979) ⁶	n/a
Mink (<i>Mustella vison</i>),	3	nutria ⁵ poisoned with 0.01% a.i. carrot bait	5-18	mink died on days 5, 8, and 18; dogs died days 6, 6, and 10	(Evans and Ward 1967) ⁷	supplemental ⁴
Dogs	3		6-10			
Ermine (<i>Mustela erminea</i>)	2	deer mice (2/day) poisoned with 0.01% a.i. grain bait ²	5	1 ermine died after eating 10 mice in 7 days, the other ate only 2 mice and survived; all skunks survived	002467 (Pank and Hirata 1976)	supplemental ⁴
Striped skunk (<i>Mephitis mephitis</i>)	5		5			

¹dead rats (*Rattus spp.*) fed to barns owls were given a free choice of poisoned bait or untreated lab. chow for five days

²dead mice (*Peromyscus maniculatus*) fed to great-horned owls, saw-whet owls, ermine, and striped skunks had received 10 daily doses of 1 g oat groats containing 0.01% Diphacinone

³the 3 great-horned owls, including the survivor, and the saw-whet owl were necropsied at the end of the test and all displayed severe symptoms of anticoagulant poisoning; coagulation times were elevated from 0.5 to 1.5 min. prior to exposure to 22 to 34+ min. on day 8; coagulation had only partially recovered (6 min.) by day 15 in the owl that survived

⁴small sample size and uncertain dosage levels

⁵*Myocastor coypus*

⁶in E. E. Kenaga (ed.), Avian and Mammalian Wildlife Toxicology, ASTM STP 693, pp. 69-79

⁷J. Amer. Veterinary Med. Assoc. 151:856-861

Collectively, these studies indicate that some birds and mammals are susceptible to secondary poisoning from consuming diphacinone residue in animal tissue. The toxicant loads

of the rats, mice, and nutria fed to raptors, mustelids, and dogs are not known but were sufficiently high to cause mortality in most species. The relationship between target loads in poisoned target species and the levels presented in coyote and sheep muscle was not established. Moreover, the amount of toxicant present in the coyote muscle was found to be considerably lower than that contained in the small intestine, liver, kidney, and heart tissues. The data are adequate to demonstrate that avian and mammalian predators may be killed from consuming target species poisoned with 0.01% a.i. bait. Therefore, the data requirements for secondary toxicity tests with a mammal (70-A-SS) and bird (70-B-SS) are fulfilled for the 0.01% a.i. bait but not for the 0.005% a.i. bait. Because toxicant loads in a target species have not been determined, that data requirement (70-C-SS) also is not fulfilled for the 0.005% a.i. bait.

2. Environmental Fate

a. Environmental Fate and Transport

(1) Brodifacoum Environmental Fate and Transport

Based on the use pattern of brodifacoum, only hydrolysis (161-1), aerobic soil metabolism (162-1), and mobility (163-1) data are required. The Agency has valid data for hydrolysis, aerobic soil metabolism, and 30-day unaged mobility. The degradates and their accumulation and decline pattern were not identified in the aerobic soil metabolism study. However, because brodifacoum is typically applied in bait stations and/or only in and around structures, bait is only 50 ppm (0.005%) a.i., and brodifacoum is immobile in soil, potential contamination of surface and ground water is low. Therefore, degradate identification, accumulation and decline, aged column leaching, field dissipation, and adsorption/desorption data are not required.

Brodifacoum is stable to hydrolysis at pH 5, 7, and 9, persistent in soil ($t_{1/2} = 157$ days), and immobile in soil columns. Unaged column leaching studies indicated that parent brodifacoum is immobile in columns of British sand, sandy clay loam, silty clay and clay; 78-94% of the applied radioactivity remained in the layer of unaged soil and $< 0.32\%$ was recovered in the leachate. Valid Kds were not obtained, but they are expected to be relatively high because of the immobility indicated in the column leaching studies. Brodifacoum is persistent, but little, if any, contamination of surface and ground waters is expected because of its use pattern and immobility in soil.

(a) Brodifacoum Degradation

Hydrolysis: Brodifacoum is stable to hydrolysis at pH 5, 7, and 9. The guideline requirement (161-1) is fulfilled. (MRID 42237701).

(b) Brodifacoum Metabolism

Aerobic Soil Metabolism: Brodifacoum degraded with a half-life of 157 days in sandy clay loam soil incubated in the dark at 21 C and 75% of 0.33 bar moisture capacity. No volatile

degradates other than $^{14}\text{CO}_2$ were identified; $^{14}\text{CO}_2$ comprised 36% of the applied radioactivity at 52 weeks posttreatment. Up to eleven [^{14}C]compounds other than [^{14}C]brodifacoum were isolated from the soil extracts at 2.07 to 17.34% of the applied (0.008 to 0.067 ppm), but none were identified. Identification and accumulation and decline of a major metabolite (17.34% of applied) is not required for currently registered uses because of the limited potential for metabolite contact with the soil. The guideline requirement (162-1) is fulfilled. (MRID 42579401)

(c) Brodifacoum Mobility

Unaged Column Leaching: Based on column leaching experiments, aged 30 days, brodifacoum residues (89-97% as brodifacoum) were relatively immobile in columns of sand, sandy clay loam, silty clay, or clay soils from Great Britain that were leached with 20 inches of 0.01 M calcium chloride solution. Following leaching, 78.8 - 94.8% of the applied radioactivity remained in the layer of aged soil and $\leq 0.32\%$ was recovered in the leachate. No degradates were identified in the soil or leachate. The test material was aged for 30 days, but after 30 days the major brodifacoum degradates had not been formed, and parent brodifacoum remained essentially intact. Therefore, this study satisfied requirements for unaged column leaching rather than aged column leaching for which the study was originally designed. Due to the very limited potential for contact with the soil, aged column leaching data are not required. The guideline requirement (163-1) is fulfilled. (MRID 42568301)

Adsorption/Desorption: These data are considered to be of uncertain value and should not be used to predict the environmental behavior of brodifacoum residues. This study is unacceptable because acetone was used as a co-solvent, resulting in brodifacoum concentrations far in excess of possible concentrations in the field. Brodifacoum is soluble in acetone at up to 20,000 parts per million. Brodifacoum was applied to a 2 g soil/20 ml water slurry at 0.9 - 4.5 ppm, although the study author stated that brodifacoum solubility in water is < 0.1 ppm in 0.01 N CaCl_2 solution. It is not possible to extrapolate these results into realistic solubility ranges, or to discount the likelihood that brodifacoum was partitioned out of the aqueous solution and into the acetone co-solvent. Also, Freundlich K values were not calculated. (MRID 42024501)

(2) Bromadiolone Environmental Fate and Transport

Based on the use pattern of bromadiolone, only hydrolysis (Guideline 161-1), aerobic soil metabolism (Guideline 162-1), and mobility adsorption/desorption (163-1) data are required. Fish bioaccumulation data also are available. The data requirement for adsorption/desorption is not fulfilled, but the available data are sufficient to characterize the environmental fate of bromadiolone for the labeled rodenticide use. The data requirement for field dissipation studies was waived, because terrestrial non-food use is limited and because baits are typically placed indoors or in bait stations. Additional data may be required if other uses are registered.

Sufficient information exists for a qualitative environmental fate assessment. Parent bromadiolone is not persistent to aerobic soil metabolism ($t_{1/2} = 14$ days) and can generally be considered immobile except in soils of low organic matter and clay, such as sand. Parent bromadiolone was classified as immobile, based on aged (30 days) and unaged soil column

leaching studies. Ninety-nine % of the leached radioactivity was bromadiolone isomers. Parent K_d s are 5.4 (silt loam) and 13.2 (loamy sand). Bromadiolone was stable to hydrolysis in pH 5, 7 and 9 buffer solutions.

Although the parent compound is not persistent and is essentially immobile except in soils low in organic matter and clay, two of the major degradates identified in the aerobic soil metabolism study are persistent. These degradates, #1 and #3, reached 19 and 25% of the applied in 120 and 270 days, respectively. Another degradate, bromadiolone ketone, reached 19% of the applied in 14 days. No mobility information is available for the degradates. Additional information to determine the K_d s would be necessary for a more comprehensive fate assessment. However, the available data are sufficient to categorize the environmental fate of bromadiolone for the labeled rodenticide use.

Bromadiolone can leach in soils low in organic matter and clay; leaching was observed in a soil column (silt loam) with 0.5% organic matter and 3.2% clay. Movement is correlated with clay and organic matter content; sand soil, with little or no organic matter and clay, leached 62% of the total radioactivity with the solute. However, because bromadiolone is applied as a food bait (pellets, place packs, or paraffinized blocks), leaching is expected to be minimal.

(a) Bromadiolone Degradation

Hydrolysis: Bromadiolone parent is stable to hydrolysis at 5, 7, and 9. The data requirement for hydrolysis is satisfied. (MRID 42237501)

(b) Bromadiolone Metabolism

Aerobic Soil Metabolism: The half-life of the parent is 14 days. Two major degradates, #1 [1,3-diphenyl-5(4'-bromo-biphenyl) pentane-1-ol] and #3 [1,3-diphenyl-5(4'-bromo-biphenyl) pentane-1,5-diol] are persistent. The mobility and toxicity of these two degradates are unknown. The data requirement for aerobic soil metabolism is satisfied. (MRID 43594301)

(c) Bromadiolone Mobility

Leaching/Adsorption/Desorption: The parent is generally immobile except in soils low in organic matter and clay. Aged and unaged column leaching studies showed no movement of radioactive bromadiolone; 97% of radioactivity remained in the top one inch. Two major degradates identified in the "new" aerobic soil metabolism study (MRID 43594301) have not been tested for mobility.

Bromadiolone can leach in soils low in organic matter and clay. Leaching was observed in a soil column (silt loam) with 0.5% organic matter and 3.2% clay. Movement of bromadiolone is correlated with clay and organic matter content. Sandy soil (little or no organic matter and clay) leached 62% of the total radioactivity with the solute.

Two major degradates, #1 [1,3-diphenyl-5(4'-bromo-biphenyl) pentane-1-ol] and #3 [1,3-diphenyl-5(4'-bromo-biphenyl) pentane-1,5-diol], detected in the aerobic soil metabolism study (MRID 43594301) are persistent. The mobility and toxicity of these two degradates are unknown. Therefore, the adsorption/desorption data requirement is not satisfied; however, the available data are sufficient to characterize the environmental fate of parent Bromadiolone. Leaching data is needed on the two major degradates noted above. (MRID 43000702, 42237501, 161972, 161973, 161988)

(d) Bromadiolone Accumulation

Accumulation in Fish: Bioaccumulation concentration factors (BCFs) of 160X and 1658X were obtained for edible and non-edible tissues in bluegill sunfish, respectively. The BCF for the non-edible portion was 11.3 higher than the edible portion and 3.2 higher than the value obtained for the whole fish. Twenty-four percent, 35.8% and 16% of Bromadiolone residues were retained in whole, edible tissues, and non-edible tissues, respectively, after 14 days of depuration. Total bluegill mortality during the 44 day test 43.9% (36/82 fish) and only 1.2% for the control. The study for fish bioaccumulation is scientifically valid and is considered supplemental. The data requirement is not satisfied because radioactive residues in the fish tissues were not identified. The identification of extractable residues at concentrations $\geq 10\%$ is a critical element of the fish accumulation study. One of the primary reasons this study is conducted is to identify the residues that accumulate in fish after exposure to a constant level of a pesticide. (MRID 00161965)

(3) Bromethalin Environmental Fate and Transport

Based on the use pattern and because bromethalin is formulated as a pelleted rodenticide, it is probable that any contact with soil and water will be minimal. Therefore, only hydrolysis (Guideline 161-1), aerobic soil metabolism (Guideline 162-1) and leaching (Guideline 163-1) data are required at this time. No data were submitted to assess the mobility of bromethalin. However, leaching data are required.

The available data are sufficient for a cursory environmental fate assessment for the current use pattern. The data submitted indicate that bromethalin is stable to hydrolysis and is persistent (half-life = 178 days) to aerobic soil metabolism. Data are not available to assess the mobility of parent bromethalin or its major degradate. However, because bromethalin is formulated as a pelleted food bait, total usage of the active ingredient is low, and field uses do not exist, ground water leaching and surface runoff are expected to be minimal.

(a) Bromethalin Degradation

Hydrolysis: [^{14}C]bromethalin, at approximately 1 ppm, was stable in aqueous buffered pH 5, 7, and 9 solutions that were incubated at 25 °C in the dark for 30 days. At 35 days post-treatment, bromethalin comprised 91.2-99.9% of the radioactivity in the three buffer solutions and was the only [^{14}C]compound detected. At the conclusion of the study, the material balance for the three solutions was 93.0-100.0% of the applied radioactivity. The data requirement (Guideline 161-1) is fulfilled. (MRID 42438701).

(b) Bromethalin Metabolism

Aerobic Soil Metabolism: Parent compound accounted for 102.4% of the applied radioactivity at the start and decreased to 22.3% by the end of the study. The calculated half-life for parent compound was 178 days ($y = -0.0039x + 4.38$, $r = -0.954$). The parent compound would be expected to be relatively stable to microbial/chemical degradation in the soil.

Up to 15.4% of the applied radioactivity was non-extractable residues; while up to 5.1% of the applied radioactivity was ^{14}C -volatiles, including 2.2% CO_2 . Because the concentration of volatiles was so low, no attempt was made to characterize them. Unknown degradates ranged up to 3.6% of applied. One degradate at a concentration of 43.8% of the applied was identified as desnitrochlorobromethalin. The data requirement (162-1) is fulfilled. (MRID 43007901)

(c) Bromethalin Mobility

Leaching/adsorption/desorption: The leaching/adsorption/desorption data requirement (Guideline 163-1) is not fulfilled. Mobility data for bromethalin parent are needed. Furthermore, a major degradate detected in the aerobic soil metabolism study, desnitrochlorobromethalin, comprising 43% of the applied, also appears to be persistent and its mobility is unknown. Leaching data also are needed for this degradate. Because bromethalin is formulated as a pelleted rodenticide primarily for use in and around buildings; it is probable that contact with soil and water will be minimal.

(4) Chlorophacinone Environmental Fate and Transport

Data have been submitted for hydrolysis (Guideline 161-1), photolysis in water (Guideline 161-2), photolysis on soil (Guideline 161-3), aerobic soil metabolism (Guideline 162-1), and leaching-adsorption/desorption (Guideline 163-1). These studies are acceptable and can be used to fulfill their respective environmental fate data requirements. No additional data are required to support the reregistration of chlorophacinone.

Based on the available data, chlorophacinone appears to be very immobile and readily degradable in the environment. It has the following characteristics: (1) low water solubility (34 ppm at 25°); (2) stable to hydrolysis at pH 5, 7, and 9; (3) very susceptible to direct photolysis in water (half-life of 37 minutes at pH 7); (4) moderately susceptible to photodegradation on soil (half-life of 4 days); (5) moderately degradable in a sandy clay loam soil under aerobic conditions (half-lives of 21-45 days); (6) expected to be very immobile in soil ($K_{\text{ads}} = 341$; $K_{\text{oc}} = 43,411$); (7) volatilizes slowly from water and soil (vapor pressure = 3.6×10^{-6} mm Hg; Henry's Law constant = 5.2×10^{-8} at m^3/mol); and (8) does not accumulate in fish at a significant level ($K_{\text{ow}} = 94$).

Results from the aqueous photolysis, the soil photolysis, and the aerobic soil metabolism studies suggest that chlorophacinone degrades very rapidly to o-phthalic acid and p-chlorophenylphenyl acetic acid through the cleavage of the indandione ring. The carboxylic acid on the o-phthalic acid was further cleaved and transformed into carbon dioxide.

In the field, chlorophacinone is expected to be bound very tightly with soil. Most of the chemical is expected to remain in the top soil layers, and its potential to reach ground water is very low. Surface water contamination may occur in less-permeable areas and in areas near water bodies. The mechanism for chlorophacinone to reach surface waters would likely be via adsorption to eroding soil, as opposed to dissolution in runoff water. Because of its high adsorption coefficient, most chlorophacinone would be partitioned in the suspended and bottom sediments instead of in the water column. Chlorophacinone might drift into surface waters from its use as a spray in orchards. However, because the spray is applied at a low height, near ground level, the resulting drift may be decreased by the surrounding orchard trees.

(a) Chlorophacinone Degradation

Hydrolysis: Indan-labeled [^{14}C]chlorophacinone at 1.07 ppm was relatively stable in sterile aqueous buffered solutions (pH 5, 7, and 9) incubated in the dark at $25 \pm 1^\circ\text{C}$ for 30 days. Two degradates (p-chlorophenyl acetic acid and o-phthalic acid) were detected from all three solutions. In the pH 5 solution, chlorophacinone was 113% of the applied immediately posttreatment, 88.5% of the applied at 14 days, and 96% of the applied at 30 days. p-Chlorophenylphenyl acetic acid was a maximum 0.4% of the recovered at 14 days, and o-Phthalic acid was a maximum 0.7% of the recovered at 30 days. In the pH 7 solution, chlorophacinone was 98.5-112.5% of the applied at 0 through 14 days and 84.1-85.9% of the applied at 30 days. p-Chlorophenylphenyl acetic acid and o-phthalic acid were each a maximum 0.2% of the recovered during the study. In the pH 9 solution, chlorophacinone was 68.4-81.2% of the applied at all sampling intervals. p-Chlorophenylphenyl acetic acid and o-Phthalic acid were each a maximum 0.4% of the recovered during the study. The material balances determined prior to partitioning ranged from 94 to 105% of the applied. The hydrolysis data requirement (Guideline 161-1) is fulfilled. (MRID 42205501)

Photodegradation in Water: Indan-labeled [^{14}C]Chlorophacinone at approximately 1 ppm degraded with a half-life of 37 minutes in pH 7 buffered solutions continuously irradiated with a xenon arc lamp for 24 hours at $23.9\text{-}25.9^\circ\text{C}$. In contrast, Chlorophacinone was $\geq 97.4\%$ of the applied at all sampling intervals in dark controls incubated at $25 \pm 1^\circ\text{C}$ for 24 hours. During the study, material balances were 94.6-103.3% of the applied for the irradiated samples and $\geq 100\%$ for the dark controls.

Photodegradation on Soil: Ring-labeled [^{14}C]Chlorophacinone at 10.8 ppm photodegraded with a half-life of 4 days on sandy clay loam soil irradiated with an artificial light source (xenon lamp) for up to 30 days at $19.9\text{-}26.9^\circ\text{C}$. By comparison, [^{14}C]Chlorophacinone degraded with a half-life of 95 days in the dark controls. Two major degradates (o-phthalic acid and p-chlorophenylphenyl acetic acid) were identified. In the irradiated samples, chlorophacinone was 95.7-99.1% of the applied immediately posttreatment, 77.7-90.5% at 1 day, 60.4-66.2% at 2-3 days, 40.0-41.9% at 5-9 days, and 24.7% at 14 days. o-phthalic acid was 0.4% of the applied immediately posttreatment, 20.9-23.9% at 1 day, 37.1% at 5 days, and 45.5% at 14 days. p-chlorophenylphenyl acetic acid was a maximum of 4.1-4.2% in irradiated samples at 3 days. The material balances were 85.9-122.7% in the irradiated samples and 94.3-121.0% in the dark controls. The photodegradation on soil data requirement (161-3) is fulfilled. (MRID 42452301)

(b) Chlorophacinone Metabolism

Aerobic Soil Metabolism: Indan-labeled [1,3-¹⁴C]Chlorophacinone at 9.7-10.5 ppm degraded with observed half-lives of 45 days in sandy clay loam soil (flushed once daily with humidified air) and 26 days in sandy loam soil (flushed once weekly). During incubation, both soils were maintained in the dark at 24-26 C and 75% of field capacity at 0.33 bar. CO₂ was the major volatile degradate, and two nonvolatile degradates (o-phthalic acid and p-chlorophenylphenyl acetic acid) were isolated from the soils.

In the sandy clay loam soil, [¹⁴C]Chlorophacinone comprised 99.0-101% of the applied immediately post-treatment, 55.7-57.9% at 30 days, 19.9-27.3% at 91 days, and 13.7-21.8% at 182 days. o-Phthalic acid was a maximum 3.6-5.4% of the applied at 91 and 182 days post-treatment, and p-chlorophenylphenyl acetic acid was a maximum 1.6-1.9% at 91 days. CO₂, the only volatile compound, totaled 21% of the applied at 30 days post-treatment, 36% at 91 days, and 50% at 182 days. Unextracted soil [¹⁴C]-residues were a maximum of 11% of the applied at 182 days post-treatment. Material balances were 99-101% of the applied at 0 and 1 day post-treatment, 92-98% at 3 through 21 days, 86-89% at 30 days, 72-78% at 91 days, and 82-88% at 182 days.

In the sandy loam soil, [¹⁴C]Chlorophacinone comprised 90.6-94.1% of the applied immediately post-treatment, 40.3-41.8% at 14 days, 26.3-26.4% at 30 days, and 12.6-12.8% at 70 days. o-Phthalic acid was a 6.6-9.8% of the applied at 14 through 70 days posttreatment, and p-chlorophenylphenyl acetic acid was a maximum 5.3-5.4% at 14 days. ¹⁴CO₂ totaled 34% of the applied at 14 days posttreatment, 50% at 30 days, and 64% at 70 days. Unextracted soil [¹⁴C]-residues were 8-10% of the applied at 14 through 70 days post-treatment. Material balances were ≥ 95% of the applied at all sampling intervals.

The aerobic soil metabolism (162-1) data requirement is fulfilled. (MRID 43159801)

(c) Chlorophacinone Mobility

Leaching/Adsorption/Desorption: The submitted study on the adsorption/desorption of chlorophacinone is acceptable. The Leaching-Adsorption/Desorption (Guideline 163-1) data requirement is fulfilled. Results from this study are summarized below:

The study's author stated that based on batch equilibrium studies, [¹⁴C]chlorophacinone was determined to be relatively immobile in four soils. Freundlich K_{ads} values were 56 for the sand soil, 126 for the loam soil, 183 for the sandy clay loam soil, and 1000 for the clay soil (the averaged K_{ads} = 341); K_{oc} values were 95745, 26900, 15600, and 35400, respectively, for the four soils (the averaged K_{oc} = 43,411). Adsorption increased with increases in clay and soil organic matter content. (MRID 42666001)

(5) Diphacinone and its sodium salt Environmental Fate and Transport

Data have been submitted for hydrolysis (Guideline 161-1), aerobic soil metabolism (Guideline 162-1), and leaching-adsorption/desorption (Guideline 163-1). The hydrolysis and

leaching-adsorption/desorption studies are supplemental and do not fulfill the guideline requirements. The data are sufficient to make a cursory assessment of the environmental fate of diphacinone. However, in order to make a quantitative environmental fate assessment, acceptable hydrolysis and leaching/adsorption/desorption data are needed.

Based on the available data, diphacinone appears to be relatively immobile and moderately degradable. It has the following characteristics: (1) low water solubility (30 ppm at 25°C); (2) stable to hydrolysis at pH 7 and 9 but susceptible to hydrolysis at pH 5 (half-life of 44 days); (3) moderately degradable in a sandy loam soil under aerobic conditions (half-lives of 28 to 32 days); (4) is expected to be immobile in soil; (5) volatilizes slowly from water and soil (vapor pressure = 1.2×10^{-8} mm Hg; Henry's Law constant = 1.8×10^9 atm-m³/mol); and (6) does not accumulate in fish at a significant level ($K_{ow} = 43$).

Results from the aerobic soil metabolism study suggest that diphacinone degraded to diphenylglycolic acid relatively rapidly. The degradate was further cleaved and transformed into carbon dioxide.

Based on laboratory studies, diphacinone is expected to be bound very tightly with soil in the field. Most of the chemical would remain in the top soil layers and its potential to reach ground water is very low. Surface water contamination may occur in less-permeable areas and in areas near water bodies. The mechanism for diphacinone to reach surface waters would likely be via adsorption to eroding soil rather than dissolution in runoff water. Although no adsorption coefficient is available, most diphacinone is expected to be partitioned in the suspended and bottom sediments instead of in the water column.

(a) Diphacinone and its sodium salt Degradation

Hydrolysis: At a concentration of 10 ppm, Diphacinone was hydrolytically stable at pH 7 and pH 9, but degraded at pH 5 with a half-life of 44 days. However, degradates resulting from hydrolysis at pH 5 were not quantified, nor were they identified other than by reference to a 1977 study (Velsicol Project No. 408398). The 1977 study was unacceptable when submitted and after a current reevaluation. Therefore, it cannot be used to identify the degradates detected in the current study. The current study is supplemental but does not fulfill the guideline requirement for a hydrolysis study (Guideline 161-1). Identification of residues present at levels $\geq 10\%$ of the applied is a critical element of the hydrolysis study. Failure to identify one or more significant degradates may result in gaps in the understanding of the environmental fate of the chemical and its degradation products. (MRID 43582401)

(b) Diphacinone and its sodium salt Metabolism

Aerobic Soil Metabolism: Radio-labeled (benzyl ring or both phenyl rings) [¹⁴C]Diphacinone, at a concentration of 2 µg/g, was metabolized with a half-life of 28.3 to 31.7 days, respectively, in sandy loam soils incubated aerobically in the dark at $25 \pm 1^\circ\text{C}$ for 3.5 months. The major degradate (defined as $\geq 10\%$ of the applied) detected in the phenyl ring-labeled study was identified as diphenylglycolic acid and was present at a maximum of 24.5% of the applied at one month after application. Diphenylglycolic acid was also detected in the benzyl ring-labeled study at a very low concentration ($\leq 10\%$ of the applied).

Benzyl ring-labeled [^{14}C]Diphacinone in soil extracts decreased from 86.4% of the applied radioactivity at day 0 to 39.2% of the applied by day 14 post-treatment, and to 9.6% of the applied by 3.5 months post-treatment. By 3.5 months post-treatment, 42.5% of the applied radioactivity was accounted for as $^{14}\text{CO}_2$. Material balances during the study ranged from 93.1 to 104.1%.

Phenyl ring-labeled [^{14}C]Diphacinone in soil extracts decreased from 87.1% of the applied radioactivity at day 0 to 41.6% of the applied by day 7 post-treatment, and to 6.5% of the applied by 3.5 months post-treatment. By 3.5 months post-treatment, 37.3% of the applied radioactivity was accounted for as $^{14}\text{CO}_2$. Material balances during the study ranged from 88.6 to 103.1.

The guideline requirement for an aerobic soil metabolism study (162-1) is fulfilled. (MRID 42035001)

(c) Diphacinone and its sodium salt Mobility

Leaching/Adsorption/Desorption: Diphacinone was relatively immobile in columns (60 cm in length) packed with sandy loam, silt loam, sand, and loamy sand soils to a depth of 30 cm. Prior to leaching, the columns had been topped with loamy sand soil that had been treated with technical diphacinone and incubated in a closed container in the dark for 30 days at 18-30°C. The columns were leached with 20 inches of distilled water.

Diphacinone was detected only in the 0-6 cm layer in the columns with sandy loam and silt loam soils. In the sand soil, diphacinone was detected in the 0-6 cm layer (at 117.1% of the applied) and in the 6-12 cm layer (at < 3% of the applied). Diphacinone was present in the 0-6 cm layer of the loamy sand soil at 76.1% of the applied, and was also present in the 6-12 cm, 12-18 cm, and 18-24 cm layers at 3.4%, 4.8%, and 4.4% of the applied, respectively. Diphacinone was not detected in any of the leachates collected from the four soil columns.

No adsorption values were reported. However, results from the aged column leaching study suggest that diphacinone is relatively immobile in the environment.

Results from this study (MRID 435824-02) are supplemental. The guideline requirement for a leaching-adsorption/desorption study (Guideline 163-1) is not fulfilled primarily because degradates, including CO_2 , were not identified or quantified. Identification of residues present at levels $\geq 10\%$ of the applied is a critical element of the leaching/adsorption/desorption study. One reason this study is conducted is to determine the mobility of parent and its degradates in soil. Failure to identify one or more significant degradates may result in gaps in the understanding of the mobility of the chemical and its degradation products and their leaching potential in ground water. A new study is required.

3. Ecological Exposure and Risk Characterization

Risk characterization integrates the results of the exposure and ecotoxicity data to evaluate the likelihood of adverse ecological effects. The means of integrating the results of exposure and

ecotoxicity data is called the quotient method. Risk quotients (RQs) are calculated by dividing exposure estimates by ecotoxicity values, both acute and chronic.

$$RQ = EXPOSURE/TOXICITY$$

RQs are then compared to OPP's levels of concern (LOCs). LOCs are criteria used by OPP to indicate potential risk to nontarget organisms and the need to consider regulatory action. The criteria indicate that a pesticide used as directed has the potential to cause adverse effects on nontarget organisms. LOCs currently address the following risk presumption categories: (1) **acute high** - potential for acute risk is high; regulatory action may be warranted in addition to restricted use classification; (2) **acute restricted use** - the potential for acute risk is high but may be mitigated through restricted use classification; (3) **acute endangered species** - the potential for acute risk to endangered species is high; regulatory action may be warranted; and (4) **chronic risk** - the potential for chronic risk is high; regulatory action may be warranted.

The ecotoxicity test values (i.e., measurement endpoints) used in the acute and chronic RQs are derived from the results of required studies. Examples of ecotoxicity values derived from the results of short-term laboratory studies that assess acute effects are: (1) LC₅₀ (fish and birds); (2) LD₅₀ (birds and mammals); and (3) EC₅₀ (aquatic invertebrates). For birds, the NOEC value is used as the ecotoxicity test value in assessing chronic effects.

Risk presumptions, RQ methods, and LOCs are summarized in Table 57 below.

Table 57 - Risk Presumptions for Terrestrial and Aquatic Organisms

Risk Presumption	Birds and Mammals		Aquatic Organisms	
	RQ Method	LOC	RQ Method	LOC
Acute High Risk	EEC ¹ /LC ₅₀ or LD ₅₀ /day ²	0.5	EEC ³ /LC ₅₀ or EC ₅₀	0.5
Acute Restricted Use	EEC/LC ₅₀ or LD ₅₀ /day	0.2	EEC/LC ₅₀ or EC ₅₀	0.1
Acute Endangered Species	EEC/LC ₅₀ or LD ₅₀ /day	0.1	EEC/LC ₅₀ or EC ₅₀	0.05
Chronic Risk	EEC/NOEC	1	EEC/MATC or NOEC	1

¹EEC = Estimated Environmental Concentration (ppm) on avian and mammalian food items (short grass; tall grass; broadleaved plants and small insects; seeds, pods, large insects)

²mg toxicant consumed/day ÷ [LD₅₀ X bird wt (kg)], where tox. consumed/day = amount food eaten X % a.i. in the food

³EEC = aquatic Estimated Environmental Concentration (ppm or ppb)

a. Brodifacoum Ecological Exposure and Risk Characterization

Brodifacoum is a single dose rodent poison for use inside and along the outside walls of buildings. It is very highly toxic to mammals and birds on an acute basis and a dietary basis.

It also is very highly toxic to aquatic organisms, but, due to its extremely low solubility, it is not believed that enough brodifacoum would dissolve in water to create a hazard to nontarget animals. Its use pattern is not likely to bring it into contact with water. There are uses for

sewers; however, these products are "weather resistant" paraffinized blocks and are not expected to dissolve in the water.

The possibility of plants or bees being unduly exposed to brodifacoum is so small that no plant or bee toxicity studies were required. Since it is being used only inside and along the outside walls of buildings, endangered species will not likely be put at risk.

This risk characterization is based upon the definition of the use pattern "inside and along the outside walls or buildings." The pattern should be put on the label.

If the use pattern is extended, nontarget hazard and secondary poisoning studies will be needed to characterize the risks. The question of endangered species risks would have to be reassessed because it is highly likely that additional species would be exposed. If the Agency can not determine measures to protect those additional species, consultation with the Fish and Wildlife Service may be necessary.

The available toxicity data on the TGAI are interpreted to mean that brodifacoum is very highly toxic to birds ($LD_{50} = 260 \mu\text{g/kg}$; $LC_{50} = 800 \text{ ppb}$), very highly toxic to mammals ($LD_{50} = 0.41 \text{ mg/kg}$, male rat), and highly to very highly toxic to freshwater organisms ($LC_{50} = 25 \text{ ppb}$). If the use pattern is extended, nontarget hazard and secondary poisoning studies will be needed to characterize the risks.

(1) Brodifacoum Exposure and Risk to Nontarget Terrestrial Animals

There are several terrestrial field studies that were submitted during the initial registration process. They were interpreted as showing that brodifacoum has a primary and secondary nontarget poisoning potential. The reregistration of brodifacoum is for indoor, transportation, and sewer uses only. Therefore, field and secondary poisoning studies are not required and the old studies and the literature were not reviewed. If field uses are requested, additional studies will be required.

(a) Brodifacoum Exposure and Risk to Birds

Brodifacoum's avian toxicity is two orders of magnitude more toxic than is required for the category very highly toxic. It poses a very high hazard to any birds that consume it. If it would be used outdoors it would be a presumptive hazard to birds. However, it is only used indoors, in vehicles, and in sewers, therefore, birds are not expected to be unduly exposed to it.

(b) Brodifacoum Exposure and Risk to Mammals

Brodifacoum is two orders of magnitude more toxic than is required for the category very highly toxic. It poses a very high hazard to any mammals that consume it. If it would be used outdoors it would be a presumptive hazard to mammals. However, it is only used indoors, in vehicles, and in sewers, therefore, wild mammals are not expected to be unduly exposed to it.

(2) Brodifacoum Exposure and Risk to Nontarget Aquatic Animals

Brodifacoum is an order of magnitude more toxic than is required for the category very highly toxic for the rainbow trout and is highly toxic to the bluegill sunfish. It is only used indoors, in vehicles, and sewers. The sewer use is for a paraffinized bait and is not expected to contaminate water. It is not expected that it will come into contact with aquatic animals. The solubility of brodifacoum is 10 mg/l. If it was put in water it would dissolve sufficiently to produce a concentration of 0.01 ppm, enough to kill some aquatic animals, although it would be below the LC_{50} . Since brodifacoum has no aquatic uses, it is not expected to enter a body of water in a large enough quantity to cause significant contamination. It is not believed that brodifacoum will pose an undue hazard to aquatic organisms.

(3) Brodifacoum Exposure and Risk to Nontarget Plants and Insects

The possibility of plants or bees being unduly exposed to brodifacoum is so small that no plant or bee toxicity studies were required. Since it is being used only outside and along the outside walls of buildings, endangered species will not likely be put at risk.

(4) Brodifacoum Endangered Species Concerns

Brodifacoum was addressed by the U.S. Fish and Wildlife Service in its Biological Opinion of March 1993. Uses considered were control of Norway rats, roof rats, and house mice in and around urban, industrial, commercial, agricultural, and public buildings and in and around transport vehicles (ships, trains, and aircraft and related port buildings). The service made a "jeopardy" or "no jeopardy" determination for the 20 "may affect" species listed below in Table 58. Other species were considered either not at risk of exposure or not likely to be affected.

Table 58 - USFWS 1993 Biological Opinion for Brodifacoum

Species	Jeopardy	No Jeopardy
Mammals:		
Alabama beach mouse (<i>Peromyscus polionotus ammobates</i>)	X	
Anastasia Island beach mouse (<i>Peromyscus polionotus phasma</i>)	X	
Choctawhatchee beach mouse (<i>Peromyscus polionotus allophrys</i>)	X	
Southeastern beach mouse (<i>Peromyscus polionotus niveiventris</i>)	X	
Perdido Key beach mouse (<i>Peromyscus polionotus trissyllepsis</i>)	X	
Florida salt marsh vole (<i>Microtus pennsylvanicus dukecampbelli</i>)	X	
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	X	
Fresno kangaroo rat (<i>Dipodomys nitratoide exillis</i>)	X	
Giant kangaroo rat (<i>Dipodomys igens</i>)		X
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	X	
Stephen's kangaroo rat (<i>Dipodomys stephensi</i>)		X
Tipton kangaroo rat (<i>Dipodomys nitratoide nitratoide</i>)		X
Point Arena mountain beaver (<i>Aplodontia rufa nigra</i>)		X
Carolina northern flying squirrel (<i>Glaucomys sabrinus coloratus</i>)	X	
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)		X
Louisiana black bear (<i>Ursus americanus luteolus</i>)		X
Birds:		
Audubon's crested caracara (<i>Caracara cheriway audubonii</i>)	X	
San Clemente loggerhead shrike (<i>Lanius ludovicianus mearnsi</i>)	X	
Hawaiian hawk (<i>Buteo solitarius</i>)		X
Reptiles:		
Eastern indigo snake (<i>Drymarchon corais couperi</i>)		X

b. Bromadiolone Ecological Exposure and Risk Characterization

(1) Bromadiolone Exposure and Risk to Nontarget Terrestrial Animals

(a) Bromadiolone Exposure and Risk to Birds and Nontarget Mammals

Because bromadiolone is a rodenticide, risk is presumed for any small mammals that feed on bait. Mortality of captive subadult coyotes fed poisoned ground squirrels also indicates a potential for secondary poisoning of predators if secondary exposure occurs. However, bromadiolone is used outdoors only in urban areas. Such placements can be made only around buildings or in sewers, and all placements around buildings must be in protective bait stations or in areas inaccessible to nontarget wildlife. Due to paucity of nontarget wildlife (i.e., non-domestic animals) in urban areas, minimal risk is expected. In non-urban areas, bromadiolone baits can be used only indoors therefore, minimal exposure of nontarget species is expected.

(2) Bromadiolone Exposure and Risk to Nontarget Aquatic Animals

Based on where and how bait is applied, little if any bromadiolone is expected in water bodies. Additionally, because it is extremely insoluble, Bromadiolone is not expected to pose a major risk to aquatic organisms.

(3) Bromadiolone Endangered Species Concerns

The U. S. Fish and Wildlife Service addressed bromadiolone in its Biological Opinion issued in March of 1993. The uses addressed were control of Norway rats, roof rats, and house mice in urban areas in and around the periphery of homes, industrial, commercial and public buildings, alleys, and cargo areas of ships, trains, and aircraft. Table 56 below summarizes the results of the USFWS opinion. The U.S. Fish and Wildlife Service made a “jeopardy” or “no jeopardy” determination for the 12 “may affect” species listed in the jeopardy tables. Other species were considered either not a risk of concern or not likely to be affected.

Table 59 - USFWS 1993 Biological Opinion for Bromadiolone

Species	Jeopardy	No Jeopardy
Mammals:		
Alabama beach mouse (<i>Peromyscus polionotus ammobates</i>)	X	
Anastasia Island beach mouse (<i>Peromyscus polionotus phasma</i>)	X	
Choctawhatchee beach mouse (<i>Peromyscus polionotus allophrys</i>)	X	
Southeastern beach mouse (<i>Peromyscus polionotus niveiventris</i>)	X	
Perdido Key beach mouse (<i>Peromyscus polionotus trissyllepsis</i>)	X	
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	X	
Fresno kangaroo rat (<i>Dipodomys nitratoide exillis</i>)		X
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	X	
Stephen's kangaroo rat (<i>Dipodomys stephensi</i>)		X
Tipton kangaroo rat (<i>Dipodomys nitratoide nitratoide</i>)		X
Point Arena mountain beaver (<i>Aplodontia rufa nigra</i>)		X
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)		X

c. Bromethalin Ecological Exposure and Risk Characterization

(1) Bromethalin Exposure and Risk to Nontarget Terrestrial Animals

Because bromethalin is used exclusively in and around buildings or in sewers, primary exposure of birds is expected to be minimal. Bait applications must be contained in protected bait stations or made in areas inaccessible to nontarget wildlife. Because bromethalin is a rodenticide,

risk is presumed for any small mammals that feed on the bait. Bait applications around buildings in non-urban areas is likely to expose some small mammals.

The Agency's incident data base has no records of wild animals being killed from feeding on rodents poisoned with bromethalin. However, secondary toxicity data are needed before secondary risks can be adequately assessed from bait applications of bromethalin around buildings.

(2) Bromethalin Exposure to Plants and Insects

No data were required.

(3) Bromethalin Exposure and Risk to Nontarget Aquatic Animals

Risks to aquatic organisms are presumed to be minimal. Bromethalin is very highly toxic to aquatic organisms, but its use in and around buildings, cargo vessels, alleys, and sewers is likely to result in minimal contamination of aquatic environments. Some potential for contact with water exists for the sewer use, especially in overflow sewers or if bait blocks are not properly wired above the water line. However, because bromethalin has an extremely low solubility in water and sewer baits are formulated as "weather-resistant" paraffinized blocks, very little, if any, exposure of aquatic organisms is anticipated from sewer use.

(4) Bromethalin Endangered Species Concerns

The U. S. Fish and Wildlife Service addressed Bromethalin in its Biological Opinion issued in March of 1993. The use patterns included control of Norway rats, roof rats and house mice in and around homes, commercial, industrial and agricultural buildings and airports, landing strips and urban alleys. The Service made a "jeopardy" or "no jeopardy" determination for the 14 "may affect" species listed in Table 55. Other species were considered either not at risk of exposure or not likely to be affected.

Table 60 - USFWS 1993 Biological Opinion for Bromethalin

Species	Jeopardy	No Jeopardy
Mammals:		
Alabama beach mouse (<i>Peromyscus polionotus ammobates</i>)	X	
Anastasia Island beach mouse (<i>Peromyscus polionotus phasma</i>)	X	
Choctawhatchee beach mouse (<i>Peromyscus polionotus allophrys</i>)	X	
Southeastern beach mouse (<i>Peromyscus polionotus niveiventris</i>)	X	
Perdido Key beach mouse (<i>Peromyscus polionotus trissyllepsis</i>)	X	
Florida salt marsh vole (<i>Microtus pennsylvanicus dukecampbelli</i>)	X	
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	X	
Fresno kangaroo rat (<i>Dipodomys nitratoides exillis</i>)	X	
Giant kangaroo rat (<i>Dipodomys igens</i>)		X
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	X	
Stephen's kangaroo rat (<i>Dipodomys stephensi</i>)		X
Tipton kangaroo rat (<i>Dipodomys nitratoides nitratoides</i>)		X
Point Arena mountain beaver (<i>Aplodontia rufa nigra</i>)		X
Carolina northern flying squirrel (<i>Glaucomys sabrinus coloratus</i>)	X	

d. Chlorophacinone Ecological Exposure and Risk Characterization

(1) Chlorophacinone Exposure and Risk to Nontarget Terrestrial Animals

Field and Rural vs Urban/Suburban Risks: The risk assessment for nontarget wildlife pertains to field uses and to bait applications in rural and urban/suburban areas where bait can be applied around buildings (e.g., barns, houses, sheds) for commensal rat and mouse control. Chlorophacinone can be used to control rats and mice around buildings in urban areas. However, due to the paucity of wildlife (i.e., non-domestic animals) in urban areas, primary and secondary risks are expected to be minimal.

EECs: The estimated environmental concentration (EEC) of a pesticide on potential food items of birds and mammals immediately after a foliar application is compared to the most sensitive avian or mammalian LC₅₀ value to assess potential risk. Based on the findings of Hoerger and Kenaga (1972) as modified by Fletcher et al. (1994), predicted 0-day maximum and mean residues of a pesticide expected on selected avian or mammalian food items immediately following a direct single application at 1 lb a.i./acre are listed in Table 61. For chlorophacinone, the only spray application is for vole control in orchards. One spray application at 0.2 lb a.i./acre is permitted per year (a repeat application is allowed if rainfall occurs within 12 hours of application). Therefore, EECs resulting from a chlorophacinone spray are presumed to be 20% of the values summarized in Table 61 for a 1 lb a.i./A application.

Table 61 - EECs¹ on Potential Avian and Mammalian Food Items After a Single Pesticide Spray Application of 1 lb a.i./A and a Chlorophacinone Orchard Spray of 0.2 lb a.i./A

Food Items	1 lb a.i./A pesticide appl.		0.2 lb a.i./A Chlorophacinone appl.	
	Maximum EEC (ppm)	Mean EEC (ppm)	Maximum EEC (ppm)	Mean EEC (ppm)
Short grass	240	85	48	17
Small insects	135	45	27	9
Seeds, Fruits, Large insects	15	7	3	1

¹Predicted maximum and mean EECs based on on Hoerger and Kenaga (1972) as modified by Fletcher et al. (1994)

(a) Chlorophacinone Birds

Acute primary risk (spray application): Acute RQs for a single spray application of chlorophacinone are summarized in Table 62 below.

Table 62 - Avian Acute RQs for a Single Ground Spray Application of Chlorophacinone¹

Site/Apl. Rate (lb a.i./A)	Food Item	Maximum EEC (ppm)	Mean EEC (ppm)	Max. Acute RQ (EEC/LC ₅₀)	Mean Acute RQ (EEC/LC ₅₀)
Orchard ² (0.2)	Short grass	48	17.00	0.86***	0.30**
	Small insects	27	9.00	0.48***	0.16*
	Seeds, Fruits, Large insects	3	1.00	0.05	0.02

¹ Single ground spray application of chlorophacinone are based on maximum and mean EECs and a bobwhite quail LC₅₀ of 56 ppm.

² OR, UT, WA, WV (vole control)

*** exceeds LOCs for acute high risk (0.5), restricted use (0.2), and endangered species (0.1)

** exceeds LOCs for acute restricted use (0.2) and endangered species (0.1)

* exceeds the LOC for endangered species (0.1)

Based on maximum EECs for a single application, the avian acute high risk, restricted use, and endangered species, LOCs are exceeded for birds feeding on short grass. restricted use and endangered species LOCs are exceeded for insectivores. Based on mean EECs, restricted use and endangered species, LOCs are exceeded for short grass. Moreover, the endangered species LOC is exceeded for birds feeding on small insects.

Acute primary risk (food baits): The potential for primary exposure of seed-eating birds to food baits exists primarily for field applications of unprotected loose bait (i.e., aerial or ground broadcast or hand applied pellets or treated whole grains). Minimal exposure is expected for applications where bait is placed in protected bait stations or areas inaccessible to nontarget wildlife, if place packs or paraffinized bait blocks are used, and for underground applications for control of pocket gophers. Birds that are mainly herbivorous or insectivorous are not expected to be at risk from grain-based food baits.

RQs for loose food baits are based on the number of LD₅₀ doses potentially consumed by a bird in one day. RQs are calculated for three separate weight classes of birds: 500-1000 g (e.g., waterfowl), 100-200 g (e.g., upland gamebird), and 20-50 g (e.g., passerine). Acute RQs for applications of chlorophacinone food baits are summarized in Table 63 below.

Table 63 - Avian (Granivore) Acute RQs (LD₅₀s/day) for Chlorophacinone Food Baits, Based on a Bobwhite Quail LD₅₀ of 258 mg/kg

Site	Bait (% a.i.)	Body Wt Class (g)	Amt Food Eaten (g) ¹	mg a.i. consumed/day	Acute RQ ^{2,3} (LD ₅₀ s/day)
Crop and noncrop areas (bare ground) ⁴ ; Forestry ⁵	0.01	20-50	3.50	0.35	0.07
		100-200	9.00	0.90	0.04
		500-1000	18.00	1.80	0.01
Orchard ⁶ ; Tree plantation ⁷ ; Noncrop areas, ditch banks, rights of way ⁸ ; Noncrop areas or unspecified ⁹	0.005	20-50	3.50	0.18	0.04
		100-200	9.00	0.45	0.01
		500-1000	18.00	0.90	0.01

¹ estimates of food consumption as a function of body size are based on information provided by Kenaga (1972) and Dunning (1984) for the mallard, bobwhite quail, and red-winged blackbird

² LD₅₀s/day = mg toxicant consumed/day ÷ [LD₅₀ (mg/kg) * bird wt (kg)]

³ only the highest RQ value is tabulated

⁴ ground squirrel control (CA, MT)

⁵ deer mouse control (CA)

⁶ vole control (CT, MD, MI, MO, NC, NY, OH, OR, PA, SC, VA, VT, WA, WV)

⁷ vole control (ID, NC)

⁸ vole control (OR)

⁹ ground squirrel, vole, chipmunk, woodrat, and/or jackrabbit control (CA, OR)

Avian acute LOCs are not exceeded for applications of loose bait when risk is based on the number of LD₅₀s potentially consumed by granivorous birds in one day. However, chlorophacinone is a multiple-feeding anticoagulant, and risk to birds that feed on bait for several days is likely greater than predicted by RQ values based on a single feeding. Avian dietary tests indicate that chlorophacinone is more toxic when ingested over a 5-day period than when administered in a single dose. For this scenario, EECs on grains or pellets are 50 ppm (0.005% a.i.baits) and 100 ppm (0.01% a.i baits). Acute RQs based on avian dietary toxicity are summarized in Table 64 below for granivorous birds.

Table 64 - Avian (Granivore) Acute RQs For Chlorophacinone Food Baits, Based on a Bobwhite Quail LC₅₀ of 56 ppm

Site	Bait (% a.i.)	EEC(ppm)	Acute RQ (EEC/LC ₅₀)
Crop and noncrop areas (bare ground) ¹ ; Forestry ²	0.01	100	1.78***
Orchard ³ ; Tree plantation ⁴ ; Noncrop areas, ditch banks, rights of way ⁵	0.005	50	0.89***

¹ ground squirrel control (CA, MT)

² deer mouse control (CA)

³ vole control (CT, MD, MI, MO, NC, NY, OH, OR, PA, SC, VA, VT, WA, WV)

⁴ vole control (ID, NC)

⁵ vole control (OR)

*** exceeds LOCs for acute high risk (0.5), restricted use (0.2), and endangered species (0.1)

Acute high risk, restricted use, and endangered LOCs are exceeded for granivorous birds for above-ground applications of both 0.01% a.i.and 0.005% a.i. loose food baits when risk is

based on dietary toxicity. The Agency is not aware of any bird poisoning incidents due to chlorophacinone, nor was any avian mortality observed during efficacy field studies in which small mammal mortality was reported. However, any possible means of reducing primary exposure of birds are important, such as use of protective bait stations, which the Agency addressed in PR Notice 94-7, issued September 16, 1994. The quality of bait stations and the care taken by applicators to secure stations and ensure that bait is not exposed outside bait compartments are important in minimizing exposure of bait to granivorous birds. Stations should be adequate to prevent destruction by wildlife (e.g., raccoons, bears) and/or livestock and protect bait in adverse weather conditions. Stations should be designed with internal bait compartments that minimize spillage and be well secured or anchored. Applicators should be encouraged to use stations with baffles, mazes, and/or small entrance holes that deter birds from entering the bait compartment, and they must ensure that bait spilled outside stations is disposed of properly. Where bait stations may not be feasible, use of products formulated in place packs or paraffinized blocks would help reduce primary exposure of birds.

Chronic risk: Chronic risk is presumed to be minimal for uses where baits are inaccessible (e.g., in bait stations, place packs, or burrows), not likely to be eaten (e.g., paraffinized blocks), if only one application is made, or if applications are made outside or not immediately preceding the breeding season of birds. Based on these criteria, applications of one chlorophacinone product (SLN CA890023) may result in chronic exposure to granivorous birds, because baiting directions specify that "An uninterrupted supply of bait should be maintained as long as any bait is taken, which may be 1 to 4 weeks." Chronic risk from this use cannot be assessed, however, until avian reproduction studies are submitted. This study is required unless label changes are made to eliminate potential chronic exposure.

Secondary risk: Data are lacking to assess potential secondary risks to avian predators and scavengers that may feed on rodents poisoned with chlorophacinone. Two field studies conducted primarily to determine the efficacy of 0.005% a.i. and 0.01% a.i. chlorophacinone food baits to the California ground squirrel also attempted to evaluate potential nontarget hazards. No mortality of avian predators or scavengers was observed in either study. However, the evaluation was based almost exclusively on locating carcasses on treatment plots. Because predatory and scavenging birds are highly mobile and wide-ranging and chlorophacinone takes several days to kill, birds might die away from study sites and not be found. Pre- and post-treatment population censusing of granivorous birds, use of radio telemetry for following and determining fates of raptors and scavengers, and extensive carcass searches on and away from study plots are needed to adequately assess secondary risks to birds. Therefore, these efficacy studies are considered inadequate for evaluating secondary risks to birds from field uses and from commensal rat and mouse control in rural areas. Potential risks will be evaluated when the required laboratory secondary toxicity tests are submitted.

(b) Chlorophacinone Mammals

Acute primary risk (food bait): Because rodents, moles (insectivores), and jackrabbits (lagomorphs) are target species and chlorophacinone is very highly toxic to small mammals, the

Agency presumes acute high risk to any small mammals that feed on chlorophacinone baits or sprayed food items (e.g., grass, seeds, insects) over a period of several days. Field studies conducted against ground squirrels on the San Joaquin range in California confirm this presumption of high acute risk. Small nontarget mammals, principally mice and woodrats, were found poisoned on plots baited with 0.01% a.i. and 0.005% a.i. Chlorophacinone grain baits. The findings indicated, however, that nontarget mortality might be reduced if 0.005% a.i. bait is used rather than 0.01% a.i. bait. Of the 47 nontarget individuals located on spot-baited plots, 27 (57%) were found on plots treated with 0.01% a.i. bait and 20 (43%) on the plots treated with 0.005% a.i. bait. Evidence of poisoning was found in 80% (16/20) of the individuals necropsied on the 0.01% a.i. plots but only 60% (12/19) of those necropsied on the 0.005% a.i. plots.

Primary risk to larger mammals are reduced for applications requiring protected bait stations, providing that the stations are adequately constructed and secured. Bait stations are designed with openings only large enough to accommodate adults of the target species. Larger species cannot gain entrance to the bait compartment, although smaller species are able to enter and thus have access to the bait. Care should be taken to ensure that bait spillage is minimized and that any bait spilled is immediately removed and not left exposed on the ground. The two dead rabbits found in one field study may have been small enough to enter the bait stations, or more likely they gleaned bait spilled outside the stations.

Acute primary risk (spray application): Sprayed ground vegetation in and around the perimeter of orchards is potentially hazardous to herbivores, and insectivores may be adversely effected by feeding on contaminated insects. Vegetation sprayed at 0.2 lb a.i./acre chlorophacinone apparently is lethal to voles, which are the target species. Mortality occurs when voles consume sprayed vegetation or when they groom fur contaminated from contact with sprayed vegetation. Although opossums exposed for 14 days to sprayed vegetation did not die or exhibit any adverse effects, sample size ($n = 6$) was small. Moreover, opossums are omnivorous and their susceptibility to chlorophacinone may not reflect that of smaller mammalian herbivores that might feed exclusively on green vegetation.

Secondary risk: A secondary hazards study in which poisoned ground squirrels were fed to captive coyotes demonstrates that rodents poisoned with 0.01% a.i. chlorophacinone bait pose a risk to coyotes and presumably other species. In that study, three of seven coyotes died from consuming one poisoned squirrel per day for five consecutive days. In the efficacy studies conducted on the San Joaquin Range in California, carcasses of California ground squirrels poisoned with 0.01% a.i. and 0.005% a.i. grain baits were available at burrow entrances and in open areas on the ground surface away from burrows. It is conceivable that coyotes and other predators (e.g., fox, bobcats, mustelids) could easily find and consume one ground squirrel per day over a 5-day period. Although no dead predators were found in those studies, the techniques used and the search effort for effected nontarget species was not adequate for wide-ranging species.

An adequate assessment of secondary risks to mammalian predators and scavengers cannot be completed until required secondary toxicity tests are conducted for the 0.005% a.i. bait. However, findings from the California ground squirrel field trials indicate that carcasses of ground squirrels poisoned with 0.005% a.i. bait may contain considerably less chlorophacinone

residue than those poisoned with 0.01% a.i. bait. Analysis of whole carcass tissue residues found mean residue loads of 0.62 (0.048-1.88) mg chlorophacinone in the 10 squirrel specimens exposed to 0.01% a.i. bait. Mean residue loads were 0.19 (0.032-0.744) and 0.16 (0.043-0.415) mg chlorophacinone in squirrel specimens exposed to 0.005% a.i. bait on spot-baited plots and plots with bait stations, respectively. The hazard of these residue loads is undetermined in the field, although some captive coyotes in the secondary hazards study were killed from exposure to ground squirrels poisoned with 0.01% a.i. chlorophacinone bait. Because the residue levels in poisoned squirrels exposed to 0.005% a.i. bait were only about one-third of those in squirrels exposed to 0.01% a.i. bait, secondary risks from 0.005% a.i. bait likely are less than for 0.01% a.i. bait.

(2) Chlorophacinone Exposure and Risk to Nontarget Aquatic Animals

EFED calculates aquatic EECs using the Generic Expected Environmental Concentration Program (GENEEC). The EECs are used for assessing risk to aquatic organisms. GENEEC uses basic environmental fate data and pesticide label application information to estimate EECs from treatment of 10 hectares. The model calculates the concentration (i.e., EEC) of pesticide in a 1-hectare, 2-m deep pond, taking into account adsorption to soil or sediment, degradation in soil before washoff into the water body, and degradation within the water body. The model also accounts for direct deposition of spray drift into the water body (assumed to be 1% of the application rate for a ground spray). The interval between applications is included in the calculations for multiple applications. The environmental fate values used in the model for chlorophacinone are: soil K_{OC} = 43,411, solubility = 34 ppm, aerobic soil metabolism half-life = 45 days, hydrolysis = > 30 days (stable), and the water photolytic half-life = 0.03 days. Aquatic EECs and RQs for the most sensitive aquatic organism (rainbow trout) are summarized in Table 65 below for those use sites for which the product label specified an application rate in pounds per acre.

Table 65 - Aquatic EECs and Acute RQs For Freshwater Organisms¹

Site	Type of Application	Appl. Rate (lb a.i./A)	No. Appl./Appl. Interval (days)	Initial EEC (ppb)	Acute RQ (EEC/LC ₅₀)
Orchard ²	ground spray	0.2	1 2 (1)	0.271 0.616	< 0.001 0.001
Orchard ³ ; Crop and noncrop areas (bare ground) ⁴	food bait	0.001	1 2 (30)	0.001 0.002	< 0.001 < 0.001

¹ Aquatic EECs and acute RQs for freshwater organisms are based on a rainbow trout LC₅₀ of 450 ppb of chlorophacinone

² OR, UT, WA, WV

³ MI, NC

⁴ CA, MT

The results indicate that no aquatic acute LOCs are exceeded for freshwater organisms at maximum registered application rates for orchard ground spray (vole control) or applications of 0.01% a.i. food bait. RQs for the 0.005% a.i. bait and other freshwater organisms would be even lower. Therefore, minimal risk to freshwater organisms is expected.

(3) Chlorophacinone Endangered Species Concerns

The U.S. Fish and Wildlife Service addressed chlorophacinone in its Biological Opinion of March, 1993. That Opinion is based on its use for control of Norway rats, roof rats, and house mice in and around homes, industrial, and agricultural buildings; pocket gophers in underground runways; mice and voles in Idaho and Delaware; orchard mice in Delaware, Connecticut, and Arizona; control of deer mice in noncrop areas of Florida; ground squirrel control in Arizona; control of deer mice, house mice, and pocket gophers in California; and indoor control of bats. The Service made a "jeopardy" or "no jeopardy" determination for the 28 "may affect" species listed below. Other species were considered either not at risk of exposure or not likely to be affected. See Table 66 below.

Table 66 - USFWS 1993 Biological Opinion for Chlorophacinone

Species	Jeopardy	No Jeopardy
Mammals:		
Alabama beach mouse (<i>Peromyscus polionotus ammobates</i>)	X	
Anastasia Island beach mouse (<i>Peromyscus polionotus phasma</i>)	X	
Choctawhatchee beach mouse (<i>Peromyscus polionotus allophrys</i>)	X	
Southeastern beach mouse (<i>Peromyscus polionotus niveiventris</i>)	X	
Perdido Key beach mouse (<i>Peromyscus polionotus trissyllepsis</i>)	X	
Amargosa vole (<i>Microtus californicus scirpensis</i>)	X	
Florida salt marsh vole (<i>Microtus pennsylvanicus dukecampbelli</i>)	X	
Hualapai Mexican vole (<i>Microtus mexicanus hualpaiensis</i>)	X	
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	X	
Fresno kangaroo rat (<i>Dipodomys nitratoideis exilllis</i>)	X	
Giant kangaroo rat (<i>Dipodomys igens</i>)	X	
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	X	
Stephen's kangaroo rat (<i>Dipodomys stephensi</i>)	X	
Tipton kangaroo rat (<i>Dipodomys nitratoideis nitratoideis</i>)	X	
Point Arena mountain beaver (<i>Aplodontia rufa nigra</i>)	X	
Utah prairie dog (<i>Cynomys parvidens</i>)		X
Carolina northern flying squirrel (<i>Glaucomys sabrinus coloratus</i>)	X	
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	X	
Gray wolf (<i>Canis lupus</i>)		X
Florida panther (<i>Felis concolor coryi</i>)	X	
Jaguarundi (<i>Felis yagouaroundi cacomitli</i>)	X	
Ocelot (<i>Felis pardalis</i>)	X	
Grizzly bear (<i>Ursus arctos horribillis</i>)		X
Louisiana black bear (<i>Ursus americanus luteolus</i>)		X
BIRDS		
Audubon's crested caracara (<i>Caracara cheriway audubonii</i>)	X	
REPTILES		
Eastern indigo snake (<i>Drymarchon corais couperi</i>)		X
Puerto Rican boa (<i>Epicrates inornatus</i>)		X
Virgin Islands tree boa (<i>Epicrates monensis (= inornatus) granti</i>)		X

e. **Diphacinone and its sodium salt Ecological Exposure and Risk Characterization**

LOCs for diphacinone address the following risk presumption categories: (1) **acute high** - potential for acute risk is high; regulatory action may be warranted; (2) **acute restricted use** - the potential for acute risk is high but may be mitigated through restricted use classification; and (3) **acute endangered species** - the potential for acute risk to endangered species is high; regulatory action may be warranted. The ecotoxicity test values (i.e., measurement endpoints) used in calculating RQs are derived from laboratory studies. Risk presumptions, RQ methods, and LOCs are tabulated below for birds. RQs are not determined for mammals; because diphacinone is a rodenticide, high risk is presumed.

(1) **Diphacinone and its sodium salt Exposure and Risk to Nontarget Terrestrial Animals**

The risk assessments for birds and small mammals pertains to field uses and to bait applications in rural and suburban areas where baits can be applied around buildings (e.g., barns, houses, sheds) for control of commensal rats and mice. Diphacinone can be used to control rats and mice around buildings, alleys, sewers, and transport vehicles (trains, ships, aircraft) in urban areas. However, due to the paucity of wildlife (i.e., non-domestic animals) in urban areas, primary and secondary risks are expected to be minimal.

(a) **Diphacinone and its sodium salt - Birds**

Table 67 - Acute Risk Presumptions for Birds

Risk Presumption	RQ	LOC
High Risk	EEC ¹ /LC ₅₀ or LD ₅₀ /day ²	0.5
Restricted Use	EEC/LC ₅₀ or LD ₅₀ /day	0.2
Endangered Species	EEC/LC ₅₀ or LD ₅₀ /day	0.1

¹EEC = Estimated Environmental Concentration (ppm) on avian and mammalian food items (short grass; tall grass; broadleaved plants and small insects; seeds, pods, large insects)

²mg toxicant consumed/day ÷ [LD₅₀ X bird wt (kg)], where tox. consumed/day = amount food eaten X % a.i. in the food

Primary risk: The potential for primary exposure of seed-eating birds exists primarily for field applications of unprotected loose bait (i.e., aerial or ground broadcast or hand applied pellets or treated whole grains). Minimal exposure is expected for applications where bait is placed in protected bait stations or areas inaccessible to nontarget wildlife, if place packs or paraffinized bait blocks are used, and for underground applications for control of pocket gophers. Birds that are mainly herbivorous or insectivorous are not expected to be at risk from grain-based food baits.

RQs for loose food baits are based on the number of LD₅₀ doses potentially consumed by a bird in one day. RQs are calculated for three separate weight classes of birds: 500-1000 g (e.g., waterfowl), 100-200 g (e.g., upland gamebird), and 20-50 g (e.g., passerine). Acute RQs for applications of diphacinone food baits are summarized in Table 68 below.

Table 68 - Avian (Granivore) Acute RQs (LD₅₀s/day)*

Site ⁺	Bait (% a.i.)	Body Wt Class (g)	Amt Food Eaten (g) ¹	mg a.i. consumed/day	Acute RQ ^{2,3} (LD ₅₀ s/day)
Unspecified sites ⁴ ; Forestry ⁵	0.01	20-50	3.50	0.35	0.05
		100-200	9.00	0.90	0.02
		500-1000	18.00	1.80	0.01
Orchard ⁶ ; Unspecified sites ⁷	0.005	20-50	3.50	0.18	0.02
		100-200	9.00	0.45	0.01
		500-1000	18.00	0.90	0.01

*the number of LD₅₀s potentially ingested per day are determined only for those use sites where loose, unprotected baits are available (i.e., broadcast or hand-applied, uncovered baits)

¹estimates of food consumption as a function of body size are based on Kenaga (1972) and Dunning (1984) for the mallard, bobwhite quail, and red-winged blackbird

²LD₅₀s/day = mg toxicant consumed/day ÷ [LD₅₀ (mg/kg) * bird wt (kg)]

³only the highest RQ value is tabulated

⁴ground squirrel control (CA)

⁵deer mouse control (CA)

⁶vole control (CT, GA, ID, MA, MI, NC, NH, OH, OR, PA, SC, UT, VA, VT, WA, WV)

⁷rats, mice, voles, woodrats, jackrabbits (CA)

*Acute RQs (LD₅₀s/day) are based on a Diphacinone Bobwhite Quail LD₅₀ of 400 mg/kg.

Acute LOCs are not exceeded when RQs are based on the number of LD₅₀ doses potentially ingested in a day. However, diphacinone is a multiple-feeding anticoagulant, and risk to birds that feed on bait for several days is likely greater than predicted by RQ values based on a single feeding. Therefore, it may be more appropriate to assess risk based on the 5-day dietary toxicity value. For this scenario, EECs on grains or pellets are 50 ppm (0.005% a.i. baits) and 100 ppm (0.01% a.i. baits). Acute RQs based on subacute dietary toxicity are summarized in Table 69 below.

Table 69 - Avian (Granivore) Acute RQs For Diphacinone Food Baits¹

Site ⁺	Bait (% a.i.)	EEC (ppm)	Acute RQ (EEC/LC ₅₀)
Unspecified sites ² ; Forestry ³	0.01	100	0.11***
Orchard ³ ; Unspecified sites ⁵	0.005	50	0.06***

*RQs are calculated only for those use sites where loose, unprotected baits are available (i.e., broadcast or exposed baits)

¹ Acute RQs For Diphacinone Food Baits are based on a Mallard LC₅₀ of 906 ppm.

²ground squirrel control (CA)

³deer mouse control (CA)

⁴vole control (CT, GA, ID, MA, MI, NC, NH, OH, OR, PA, SC, UT, VA, VT, WA, WV)

⁵rats, mice, voles, woodrats, jackrabbits (CA)

***exceeds the endangered species LOC

Acute high risk and restricted use LOCs are not exceeded for food bait applications when the RQ is based on the subacute dietary toxicity. However, the endangered species LOC is exceeded for granivores for field and "around" building applications of 0.01% a.i. bait in California.

Secondary risk: Potential secondary risks exist for some avian predators and scavengers that feed on poisoned rodents. As indicated by a supplemental study, rats and mice poisoned with 0.01% a.i. diphacinone baits can be hazardous to owls and presumably other raptor species that feed on poisoned animals. Such exposure is likely to occur for the uses of 0.01% a.i. diphacinone bait for field uses and around buildings in California. Most field baits and those used to control commensal rats and mice around buildings are 0.005% active ingredient. Risk from 0.005% a.i. bait cannot be assessed until secondary toxicity data become available. However, based on the secondary hazard reported for the 0.01% active ingredient bait, risk is presumed for the 0.005% a.i. bait until data are available to refute that presumption.

(b) Diphacinone and its sodium salt - Mammals

Primary risk: Because diphacinone is a rodenticide with label claims for control of rodents (rats, mice, voles, ground squirrels, pocket gophers, muskrat, chipmunk), lagomorphs (jackrabbit), and carnivores (mongoose), the Agency presumes acute high risk to any small mammals that feed on diphacinone baits. Primary risk is likely to be highest for field uses, because more wildlife is apt to be exposed in orchards and other areas than around buildings where rats and mice are baited. The Agency also presumes that risk from 0.01% a.i. baits is greater than that for 0.005% a.i. baits. High risk to small carnivores also may exist from products containing flavorings such as "meat and blood" and "fish", because the odors and taste of such flavorings may attract and enhance bait consumption by species that might not otherwise be attracted to grain-based bait.

Primary risk can be reduced for mammals larger than the target species if protected bait stations are used for applying bait. Well designed bait stations have entrance holes just large enough for adults of the target species but too small for larger nontarget species. However, because smaller species can enter bait compartments and feed, high risk is presumed for any granivorous mammals in the treatment area that are smaller than the target species.

Secondary risk: Studies conducted by the Denver Wildlife Research Center indicate that animals poisoned with 0.01% a.i. diphacinone bait pose a risk to secondary consumers. In one study (Evans and Ward 1967), 0.01% a.i. carrot baits were fed to nutria for 10 days. Dead nutria (skinned carcass, liver, heart, and lungs) were frozen and subsequently thawed and fed to three mink and three mongrel dogs. The three mink died after 5 to 18 days exposure, and the three dogs died after 6 to 10 days. The authors concluded that nutria poisoned with 0.01% a.i. diphacinone bait could pose a secondary risk to some nontarget species. In another study, one of two ermine died after eating 10 poisoned mice in 7 days.

Savarie et al. (1979) administered a single oral dose of diphacinone (7 dosage levels) to 10 captive coyotes. The LD₅₀ was 0.6 mg/kg, with animals dying 6 to 17 days after dosing. Skeletal muscle from dead coyotes was ground, mixed with 25% oatmeal, reground, and refrigerated until 30 g samples were fed to groups of laboratory rats (8 rats per group) to indicate the potential for secondary hazard. Four of eight rats died 6 to 8 days after feeding on meat mixture containing 0.5 ppm diphacinone. Rats feeding on meat mixtures of less than 0.5 ppm

survived with no clinical signs of toxicity. However, as the authors emphasized, the amount of residue in liver, kidneys, heart, and small intestine exceeded 0.5 ppm in many or most of the dead coyotes, and selective feeding on these tissues by secondary consumers could result in increased risk of poisoning.

The Agency currently lacks secondary hazards data to assess risk to mammalian predators and scavengers that might feed on rodents poisoned with 0.005% a.i. diphacinone baits. These data are needed to assess risks from the various field uses and for use against commensal rats and mice around buildings in rural areas. However, based on the demonstrated secondary toxicity of 0.01% a.i. bait, the Agency presumes secondary risks to mammals from applications of 0.005% a.i. baits. Secondary risks will be reconsidered when toxicity data are submitted.

(c) Diphacinone and its sodium salt - Exposure and Risk to Nontarget Plants and Insects

No data were required.

(2) Diphacinone and its sodium salt Exposure and Risk to Nontarget Aquatic Animals

Minimal risk to aquatic organisms is expected from the current uses of diphacinone. Outdoor products are food baits, most of which are pelletized and/or paraffinized, and the amount of active ingredient applied per acre is very low. Applications made in bait stations further limit contact of bait with soil. The available environmental fate data indicate that most diphacinone will be tightly bound to soil, and little contamination of surface waters is expected. Moreover, diphacinone has a low solubility in water (30 ppm) and is only moderately toxic to aquatic organisms ($EC_{50}/LC_{50}s = 1.8-7.5$ ppm). Diphacinone salt, which is highly soluble in water, can be dissolved in water and applied as a liquid bait; however, it is limited to indoor use for rat and mouse control.

(3) Diphacinone and its sodium salt Endangered Species Concerns

The U.S. Fish and Wildlife Service addressed Diphacinone in its Biological Opinion of March, 1993. The use patterns included commensal and field rodent control in and around buildings, in orchards, cropland, pasture, rangeland, ornamentals, forest, rights-of-way, along ditches and banks of waterways, garbage dumps, and sewers. The Service made a "jeopardy" or "no jeopardy" determination for the 34 "may affect" species listed below. Other species were considered either not at risk of exposure or not likely to be affected. See Table 70 below.

Table 70 - USFWS 1993 Biological Opinion for Diphacinone

Species	Jeopardy	No Jeopardy
Mammals:		
Alabama beach mouse (<i>Peromyscus polionotus ammobates</i>)	X	
Anastasia Island beach mouse (<i>Peromyscus polionotus phasma</i>)	X	
Choctawhatchee beach mouse (<i>Peromyscus polionotus allophrys</i>)	X	
Southeastern beach mouse (<i>Peromyscus polionotus niveiventris</i>)	X	
Perdido Key beach mouse (<i>Peromyscus polionotus trissyllepsis</i>)	X	
Amargosa vole (<i>Microtus californicus scirpensis</i>)	X	
Florida salt marsh vole (<i>Microtus pennsylvanicus dukecampbelli</i>)	X	
Hualapai Mexican vole (<i>Microtus mexicanus hualpaiensis</i>)	X	
Key Largo cotton mouse (<i>Peromyscus gossypinus allapaticola</i>)	X	
Salt marsh harvest mouse (<i>Reithrodontomys raviventris</i>)	X	
Fresno kangaroo rat (<i>Dipodomys nitratoides exillis</i>)	X	
Giant kangaroo rat (<i>Dipodomys igens</i>)	X	
Morro Bay kangaroo rat (<i>Dipodomys heermanni morroensis</i>)	X	
Stephen's kangaroo rat (<i>Dipodomys stephensi</i>)	X	
Tipton kangaroo rat (<i>Dipodomys nitratoides nitratoides</i>)	X	
Point Arena mountain beaver (<i>Aplodontia rufa nigra</i>)	X	
Silver rice rat (<i>Oryzomys palustris natator</i> (= <i>Oryzomys argentatus</i>))	X	
Utah prairie dog (<i>Cynomys parvidens</i>)	X	
Carolina northern flying squirrel (<i>Glaucomys sabrinus coloratus</i>)	X	
Delmarva fox squirrel (<i>Sciurus niger cinereus</i>)		X
Key Largo woodrat (<i>Neotoma floridana smalli</i>)	X	
Lower Keys rabbit (<i>Sylvilagus palustris hefneri</i>)	X	
Black-footed ferret (<i>Mustela nigripes</i>)	X	
San Joaquin kit fox (<i>Vulpes macrotis mutica</i>)	X	
Gray wolf (<i>Canis lupus</i>)	X	
Florida panther (<i>Felis concolor coryi</i>)	X	
Jaguarundi (<i>Felis yagouaroundi cacomitli</i>)	X	
Ocelot (<i>Felis pardalis</i>)	X	
Grizzly bear (<i>Ursus arctos horribilis</i>)	X	
Louisiana black bear (<i>Ursus americanus luteolus</i>)	X	
Birds:		
Audubon's crested caracara (<i>Caracara cheriway audubonii</i>)	X	
Reptiles:		
Eastern indigo snake (<i>Drymarchon corais couperi</i>)		X
Puerto Rican boa (<i>Epicrates inornatus</i>)		X
Virgin Islands tree boa (<i>Epicrates monensis</i> (= <i>inornatus</i>) <i>granti</i>)		X

IV. RISK MANAGEMENT AND REREGISTRATION DECISION

A. Determination of Eligibility

Section 4(g)(2)(A) of FIFRA requires the Agency to determine, after submission of relevant data concerning an active ingredient, whether products containing the active ingredient are eligible for reregistration. The Agency has previously identified and required the submission of the generic (i.e., active ingredient specific) data required to support reregistration of products containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, diphacinone and its sodium salt, and pival and its sodium salt, as active ingredients. The Agency has completed its review of these generic data, and has determined that the data are sufficient to support reregistration of all products containing these chemicals, except pival and its sodium salt. Appendix B identifies the generic data requirements that the Agency reviewed as part of its determination of reregistration eligibility of brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt. Appendix B also lists the submitted studies that the Agency found acceptable.

The data identified in Appendix B are sufficient to allow the Agency to assess the registered uses of brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt, and to determine that these chemicals can be used without resulting in unreasonable adverse effects to humans and the environment when labeled and used as specified in this RED document. The Agency, therefore, finds that all products containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt as the active ingredient are eligible for reregistration. The reregistration of particular products is addressed in Section V of this document.

With the exception of pival and its sodium salts, the Agency made its reregistration eligibility determination based upon the target data base required for reregistration, the current guidelines for conducting acceptable studies to generate such data, published scientific literature, data from the American Association of Poison Control Centers, etc. and the data identified in Appendix B. Although the Agency has found that all uses of these chemicals are eligible for reregistration, it should be understood that the Agency may take appropriate regulatory action, and/or require the submission of additional data to support the continued registration of products containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt, if new information comes to the Agency's attention or if the data requirements for registration (or the guidelines for generating such data) change.

The chemical pival and its sodium salts was suspended by the Agency in December 1994 for failure of the registrant, Motomco, Incorporated, to respond to the Agency's Data Call-In Notice (DCI) and submit the required data to support the continued registration. The Agency, during the reregistration process for this rodenticide cluster RED, again solicited the registrant to submit the required data to support the reregistration. The registrant chose not to support the reregistration of pival and its sodium salts. Therefore, the Agency has determined that pival and its sodium salts are *ineligible* for reregistration, and will remain suspended. In the future, the Agency may seek cancellation of the registration for pival and its sodium salt.

1. Eligibility Decision

Based on the reviews of the generic data for the active ingredients brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt, the Agency has sufficient information on the health effects of these chemicals and on their potential for causing adverse effects in fish, wildlife, and the environment. The Agency has determined that these chemicals, labeled and used as specified in this Reregistration Eligibility Decision document, will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, the Agency concludes that products containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt, are eligible for reregistration.

2. Eligible and Ineligible Uses

The Agency has determined that all uses of brodifacoum, bromethalin, and bromadiolone are eligible for reregistration.

The Agency has determined that all uses of chlorophacinone and diphacinone and its sodium salt are eligible for reregistration, with the exception of certain field bait uses. The Agency has determined that field-bait uses containing .005% chlorophacinone and diphacinone and its sodium salt are eligible for reregistration.

The Agency has determined that field-bait uses containing more than .005% chlorophacinone and diphacinone and its sodium salt are ineligible for reregistration. Field tests have adequately demonstrated that products with lower-concentrations of these active ingredients are sufficiently efficacious for target pest species, and that the uses with higher concentrations have the potential to cause unnecessary secondary poisonings to avian and mammalian consumers.

The Agency has also determined that all uses of pival and its sodium salt are ineligible for reregistration and are to remain suspended.

B. Regulatory Position

The following is a summary of the regulatory positions and rationales for brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt. Where labeling revisions are imposed, specific language is set forth in Section V of this document.

1. Summary of Risk Assessment Conclusions

a. Human Health Risk

(1) Dietary

These chemicals are non-food use pesticides. Therefore, tolerance reassessment is unnecessary. Also, it is unlikely that there will be any dietary exposure to humans via food sources or via drinking water through contamination of ground or surface water.

(2) Residential and Occupational Risk

(a) Residential

EPA is concerned about the continued risk of human exposure, especially children, resulting from the continued use of rodenticides in residential settings. In fact, EPA has gone on record, over the years, to express its concern regarding human exposures and incidents to rodenticides. PR Notice 94-7, Label Improvement Program for the Revision of Use Directions for Commensal Rodenticides and Statement of the Agency's Policies on the Use of Rodenticide Bait Stations, issued by the Agency on September 16, 1994, required registrants of certain rodenticide products claimed to control commensal rodents to revise the labeling of such products to bear certain statements concerning "tamper-resistant bait stations." It also informed rodenticide registrants, applicants, and other interested persons of EPA's continued concern for the safe use of rodenticides. Moreover, PR Notice 94-7 outlined EPA's policies regarding the isolation of commensal rodenticides from children, dogs, other pets, domestic animals, and non-target wildlife. PR Notice 94-7, in part, stated the following:

"Historically, more than 1000 incidents of human exposure to rodent poisons have been reported annually in the U.S. Numbers of human incidents reported have increased greatly in recent years with the advent of a new reporting network. In 1988, more than 10,000 rodenticide incidents were reported in the American Association of Poison Control Center's National Data Collection System. Nearly 90% of these cases involved children under six years of age. Nearly all of such exposures are classed as accidents. The human exposure incidents that are reported may represent less than half of those which occur. Well over 80% of reported human rodenticide exposures involve anticoagulant compounds.

Young children thought to have been exposed to rodenticides are often given some medical attention, although symptoms of poisoning usually are not observed, especially in cases involving anticoagulants which act very slowly. Although young children have been killed by rodenticides, most rodenticide-related deaths of humans result from intentional ingestions by persons much older than five years of age.

While reports summarizing incidents typically do not indicate exactly how exposures have occurred, it is likely that most accidents are related to improper use rather than to improper storage. Accidents of both types are preventable. EPA believes that the large numbers of exposure incidents provide evidence that current policies for promoting bait protection have not been sufficient and, therefore, that tougher, more explicit policies are needed. EPA has not been persuaded by contentions that the relatively low incidences of serious human illnesses caused by accidental exposures to compounds such as warfarin justify selective relaxations of requirements for bait protection..."

Data collected by the American Association of Poison Control Centers (AAPCC) for 1995 report 17,187 human exposures to all rodenticides. Of these numbers, 14,710 (~ 86%) exposures were attributed to the anticoagulant rodenticides. Of concern to EPA is the number of exposures to children less than six years-old; in 1995, there were a total of 14,900 or approximately 87% of the total exposures. When the total number of human exposures to rodenticides was analyzed, 6,450 were significant enough to result in treatment at a health care facility.

Data collected by the AAPCC for 1996 report that 17,601 rodenticide exposures occurred to humans. The anticoagulant rodenticides (brodifacoum, bromadiolone, chlorophacinone,

diphacinone and its sodium salt, and pival and its sodium salt), accounted for 14,836 or over 84% of the total exposures. Of these exposures, 13,362 (90%) occurred in children less than six years-old. Approximately 5,300 exposures resulted in people seeking treatment at a health care facility.

Furthermore, rodenticides are acutely toxic to humans. Margins of Exposures (MOEs), when bait is ingested, are less than one. Generally, the Agency considers a MOE of 100 or above to be protective of the public's health. The Agency, for example, has calculated the dose a 10 kg child receives from a 43 gram packet of rodenticide (standard commercial package). The Agency's calculation resulted in a MOE of 0.6. The toxicological endpoint for diphacinone, was 0.13 mg/kg/day.

Rodenticides, when used as currently sold and marketed, are responsible for a high number of human incidents and accidental exposures each year. In the recent past, poison control centers have enhanced their ability to capture incident data. Because of improved data collection, it appears that the high number of human unintentional or accidental exposures to rodenticides remain constant each year, or may be increasing. From the number of rodenticide exposures to children, it is clear that children under six years-old are disproportionately more at risk from the continued use of these products in residential settings. Based on these facts, EPA is concerned regarding the risk of exposure to these chemicals to residential users, particularly children.

(b) Occupational (Mixer/Loader/Applicator)

The Agency has determined that there is potential exposure to applicators and/or other handlers during typical use patterns associated with these chemicals. Specifically, the Agency is concerned about potential dermal and inhalation exposures to handlers during the loading and application of these chemicals.

Based on the use patterns and potential exposures described above, major handler exposure scenarios were identified such as: (1) placing bait packs; (2) loading bait boxes or bait stations with meal bait, grain bait, bait pellets, or other food-based bait from larger containers; (3) breaking parafinized blocks into pieces and placing the pieces in bait stations; (4) securing large paraffin blocks in bait stations used in sewers; (5) applying bait by hand; and (6) applying bait, e.g. pellets in broadcast treatments using ground equipment; and (6) spraying.

It is unclear from labels and other available information (1) the extent to which it is necessary, due to size or design of packages, for handlers to directly handle or come in contact with the bait during loading into the bait stations (which may result in dermal exposures); or (2) the extent to which it is possible for dusts associated with meal baits, grain baits, or pellets to result in inhalation exposure to handlers during loading into bait stations. Hence, the Agency is concerned about potential dermal exposure and inhalation of fine particles, and dusts associated with baits which could be inhaled resulting in an inhalation and/or oral exposure. As a result, the Agency is requiring more stringent PPE for all occupational uses of these chemicals as discussed below and in Section V of this RED document.

b. Risk to Household Pets

As with human exposures, EPA is concerned about the increased risk posed to household pets to rodenticides used in residential settings. When used as currently sold and marketed, rodenticides account for a high number of incidents and accidental exposures to household pets every year. PR Notice 94-7 stated in part that:

“Dog incidents account for more than 80% of the reported exposures of nontarget animals to commensal rodenticides. Most dog exposures are believed to be accidental. The annual number of incidents of animals being exposed to rodenticides is not known, but over 4,000 rodenticide-related inquiries were made to the Illinois Animal Poison information Center in each of the years from 1986 to 1988, with a high of 6,272 inquiries having been made in 1987.

Symptoms of rodenticide poisoning are detected more frequently in reported animal cases than in child cases. A larger percentage of asymptomatic exposures of animals may go undetected as pets and livestock generally are not watched as closely as children. Dogs may die as a result of rodenticide exposures, especially if acute poisons are involved. Extended Vitamin K1 therapy may be needed for dogs that have been exposed to certain anticoagulants, such as brodifacoum or diphacinone, which are retained in the body for a relatively long time. For animal exposures reported in 1987 (and probably in other years as well), the animal's owner typically was the source of the rodenticide. Most of these exposures were accidental and occurred in or around human residences.”

The American Association of Poison Control Centers (AAPCC) reported 41,854 animal exposure cases (mostly dogs and cats) in 1990. Of these, 3,157 involved rodenticides (8.4%). Most rodenticide poisonings are due to careless placement or overuse of baits, and, much less often, failure to discard poisoned rodents and malicious poisonings. There were a total of 454 deaths reported in animals in 1990, of which 39 (9.2%) were due to anticoagulant rodenticides, the second leading cause of death after ethylene glycol and related compounds.

c. Environmental Risk

(1) Environmental Fate

In general, these rodenticides are very similar in their holistic environmental fate characteristics. However, they differ in specific environmental fate characteristics as discussed earlier in this RED document.

Based on environmental chemistry data, and the use pattern, use of these rodenticides is not expected to result in contamination of surface and ground water. Although persistent, these chemicals tend to be relatively immobile in soil and fairly insoluble in water. Most are applied as a pelleted bait used in and around buildings. They are primarily used in protective bait stations when used outdoors, therefore, their environmental fate risk is negligible.

(2) Ecological Effects

Primary toxicity to mammals is very high for these rodenticides. Primary toxicity to birds is mostly high to very high for the single feeding rodenticides (brodifacoum, bromadiolone, and bromethalin). It is mostly moderate for the multiple feeding compounds (diphacinone and

chlorophacinone). Toxicity to aquatic organisms ranges from moderate to very high. Chronic data are not available for any of the rodenticides.

For only a few of these chemicals do some secondary toxicity data exist for avian and mammalian predators and their scavengers. These studies are required to support the use of rodenticides in fields, and “around” buildings in non-urban (i.e., rural, suburban) areas. Available laboratory and/or field data indicate that rodents, poisoned with brodifacoum or bromadiolone baits, can kill avian and mammalian secondary consumers. Sufficient data exist to indicate that diphacinone bait (0.01%) is secondarily hazardous to birds and mammals and chlorophacinone bait (0.01%) is hazardous to mammalian predators. Avian data are not available for chlorophacinone bait at 0.01%. Adequate data are not available for birds and mammals for chlorophacinone and diphacinone bait or for bromethalin (all at 0.005%).

2. Summary of Rodenticide Benefits

Although the Agency is concerned about the risk posed to humans, especially children, and non-target animals by the use of these products as they are currently sold and marketed, EPA also recognizes the important public health benefits of rodenticides. Specifically, the Agency considered the benefits from rodent control as it relates to prevention of disease transmission, property damage, and attacks on humans.

Rodenticides are one of the most efficient available means for controlling existing infestations of large numbers of rodent pests. These agents also may be the method of choice in controlling certain smaller rodent infestations and often are needed to control individuals which cannot be removed by use of traps.

People control rodent pests primarily because these animals: (1) are associated with the spread of many types of serious diseases; (2) bite humans; (3) damage private and commercial property; (4) destroy and contaminate millions of tons of agricultural crops annually, both in the field and in storage; and, (5) are generally unwelcome in homes, schools, places of business, and other areas occupied or frequented by humans.

The diseases vectored by rodents include: plague, Rickettsial diseases (e.g., murine typhus, Rickettsialpox), leptospirosis, rat bite fever, Salmonellosis, hantavirus, Lyme disease, granulocytic Ehrlichiosis, relapsing fever, and others. Rodents transmit diseases either directly or indirectly, via ectoparasites such as fleas, ticks or mites, or bodily waste products and secretions.

Many rodent-transmitted diseases recently have been held in check through the private and public use of rodenticides, along with other pest and disease control and management practices. Improved pest management, including coordination of rodenticide use and other rodent abatement practices, is a principal reason why numbers of cases and deaths associated with many rodent-transmitted diseases have been much lower in the latter part of the 20th Century than was the case in prior decades. For example, there were 3,700 reported cases of murine typhus in the U.S. in

1942 but only 12 reported cases in 1987. In recent decades, however, "new" rodent-transmitted diseases such as Lyme disease and hantavirus have emerged, primarily in rural and semi-rural areas in the U.S. Of these diseases, the HPS hantavirus strains appear to be the most serious, with a composite fatality rate of approximately 45% for the 170 + human cases reported since 1993.

The number of cases of rats biting humans has been estimated to be 14,000 per year. More recent information is not available on a nationwide basis.

Rodents damage structures by gnawing on integral parts and by contaminating them with bodily waste products and other secretions. Rodents can gnaw through wood, concrete, asphalt, sheet rock, plumbing, and soft metals. Rodent damage to electrical wiring has been cited as the probable cause for certain fires and explosions, as well as an instance of shutting down the Internet. When buildings, including residences, are heavily infested, poisoning generally is an integral component of successful abatement programs.

Field rodents such as ground squirrels, voles, and native mice and rats cause significant damage to crops and rangelands. Certain crops, such as sugarcane, are heavily damaged in the field by commensal rats and mice. Commensal rodent species are responsible for much of the pest damage to stored food and feed in the United States. Chlorophacinone, diphacinone, and zinc phosphide play an important role in the management of rodents associated with agricultural crops.

In general, commensal rats and mice are not "liked" by humans. This may be a factor in rodenticide use; however, disease concerns and desires to protect self and property are present in most cases in which rodenticide baits are used.

Rodenticide baits also are used in certain special circumstances, such as managing or eradicating non-native rodent species at sites where such rodents jeopardize the continued existence of certain threatened or endangered species. Control programs of this nature are run by government agencies and typically are limited to offshore islands or other refuge areas.

EPA has consulted with the Center for Disease Control (CDC), Rodent Control offices in several states (New York; Philadelphia, Pennsylvania; Boston, Massachusetts; Arlington, Virginia; and Chicago, Illinois), and a nationally recognized rodent expert regarding public health benefits and the Agency's risk mitigation measures. Based upon these discussions, the Agency has decided that its reregistration eligibility determination and the risk mitigation measures specified in this document are in the public interest as per FIFRA Section 3(c)(5).

3. Risk Mitigation Overview

As discussed earlier in this RED document, the Agency is concerned about the risks posed to humans, particularly children, household pets, and non-target animals, from the continued use of these products as they are currently sold, marketed, and used.

While an effective antidote is available, treatment must occur in time. Furthermore, treatment can be traumatic for children, and there are costs both for time and treatment. In addition, the Agency's concerns are heightened by the number of incidents and exposures, reported annually, to these chemicals involving humans (particularly children less than six years-old), and household pets. The Agency, however, is also aware of the public health benefits these chemicals provide. As a result of the Agency's concerns, the following risk mitigation measures are necessary for all registrations of brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt.

a. Reducing Risk for Children and Household Pets

The Agency has concluded that the rodenticides, containing the active ingredients subject to this RED document, which are used in residential settings, schools, recreation areas, and other places that children may frequent, pose the greatest risk of accidental exposure and incidents to humans, particularly children, and household pets. As set forth below, the Agency is requiring the following risk mitigation measures for rodenticide active ingredients subject to this RED document used in residential settings, schools, recreation areas, and other places children may frequent. In addition, outside the scope of this RED process, the Agency is requiring the identical risk mitigation measures to the registrations of other rodenticide active ingredients such as zinc phosphide, warfarin and its salt, difethialone, vitamin D-3, and red squill and, if necessary, registrations of new rodenticide active ingredients to be used in residential settings, schools, recreation areas, and other places that children may frequent.

When reviewing these chemicals for their reregistration eligibility, the Agency carefully considered the acute risk posed by the residential use of these chemicals along with the benefits for allowing them to remain on the commercial market for consumers to use. EPA concludes that although these products pose an acute risk to humans and household pets, the Agency has determined that the continued use of these rodenticides in residential and other settings provide a critical public health benefit.

The Agency recently became aware of incident data which suggests that there may be a potential incident problem involving the active ingredient brodifacoum. At this time the Agency is reviewing the data; no final conclusions have been reached. Additionally, through the "Notice of Availability" for this document, the Agency requests state incident data for all rodenticides to better understand the extent of this potential problem. After review, the Agency may impose additional restrictions on the use of brodifacoum and/or other active ingredients.

b. Incremental Risk Reduction

In order to address the risk concerns posed by the use of these products and still maintain the benefits afforded by their use, the Agency developed a two-phased approach to mitigating risk. The first phase involves measures which can be put in place in the short term that will serve to identify when an exposure has occurred, lessen the number of exposures, and monitor exposures.

The second phase will move toward eliminating the opportunity for exposures in the long term. Ideally, the Agency would have preferred to impose measures which would have immediately eliminated opportunities for exposures; however, it recognizes that new technologies may not exist and may need to be developed to accomplish this while still maintaining the efficacy of the product. The Agency has, therefore, developed this phased approach to allow time for the development and testing of a new technology. The innovation of the new technology will be coordinated by a Stakeholder group. The two phases to risk mitigation, the time frames, and reporting requirements are described in detail below.

(1) Phase One: Short-Term Risk Mitigation Measures

(a) Indicator Dye and Bittering Agent

All registrants of rodenticides, other than those with products used exclusively at agricultural sites, must incorporate an indicator dye into their formulations. The dye is intended to help identify whether a child or household pet has consumed a rodenticide by dyeing their mouth and/or hands a bright color. EPA believes the dye will play an important role in identifying when an exposure has occurred, thereby helping to determine if treatment is required.

Typically, it is very difficult for parents and guardians of children and pet owners to discern whether an exposure or ingestion has actually occurred. This uncertainty may lead to unnecessary treatment at a medical facility as a precautionary measure. In turn, the Agency believes this measure will also enable parents and guardians of children and pet owners to seek medical or veterinarian attention sooner rather than later and avoid a serious medical problem.

All registrants of rodenticides, other than those with products used exclusively at agricultural sites, must incorporate a bittering agent into their formulations to make the bait less palatable to humans. EPA believes that the bittering agent may cause some children to expel the bait if placed in the mouth. The Agency is fully aware that children younger than one year old do not have fully formed taste buds and may not be fully protected by this measure. However, this measure should prevent some exposures to children older than one year of age. Likewise, the EPA is also aware that this measure may not affect exposures to non-target household animals. EPA recognizes that many of the formulations currently contain a dye. All registrants may present data demonstrating that the current dye meets the intent of this requirement.

(b) Improved Labeling Requirements

EPA is requiring a number of label revisions to rodenticide registrations. These requirements are set forth in Section V of this RED document and are in addition to those in PR Notice 94-7 that have already been implemented.

Labels which currently allow placement of rat and mouse baits “in and around buildings” must be amended to “indoors and against the outside walls of buildings.” Rat and mouse bait placements will be allowed “around” buildings only if registrants demonstrate in secondary toxicity studies that secondary risks to birds and mammals are minimal.

Under “Note to Physicians,” a few of the labels recommend that Vitamin K₁ be administered intravenously (IV) or intramuscularly (IM). The veterinary literature states that vitamin K₁ can cause anaphylactic reactions if given IV and extensive hemorrhage after IM administration. Sheldon Wagner, M.D., a consultant to OPP, confirmed that Vitamin K₁ should not be given IV unless there is a hemorrhagic crisis. IM administration is acceptable in humans. The recommendation for IV administration must be deleted from the label.

**(c) Annual Submission of American Association of
Poison Control Centers (AAPCC) Data**

Under the authority of FIFRA section 3(c)(2)(B), the Agency is requiring registrants of rodenticides subject to this RED document, to submit to the Agency annual American Association of Poison Control Centers’ (AAPCC) data. The Agency is requiring AAPCC data for the years 1999 through 2009. Registrants are encouraged to share the cost of generating data, whenever appropriate. If needed, the Agency may ask registrants of rodenticides for additional annual submission of AAPCC data. These data will enable the Agency to determine whether the imposed risk mitigation measures are reducing incidents/exposures to humans, in particular children. AAPCC data obtained by the Agency for 1995 and 1996 will serve as baseline data. The American Association of Poison Control Centers is located at 3201 New Mexico Avenue NW, Suite 310, Washington, D.C. 20016. They can be reached by telephone on (202) 362-7217 and by fax on (202) 362-8377.

**(d) Restricted Use Classification for Tracking
Powders**

When rodents migrate through tracking powder during their daily activities they contact and accumulate the rodenticide on their bodies and/or fur. Afterward, the rodents ingest the poison while grooming. If enough rodenticide is consumed, death occurs.

EPA has determined that the use of these chemicals as tracking powders in and around residences, schools, recreation areas, and other places that children may frequent, pose a significant risk to children, household pets, and non-target animals. EPA believes that children and pets can easily come in contact with rodenticides used as tracking powders simply based on their use patterns and use locations. To protect children and non-target animals from exposure, all products formulated as tracking powders must remain classified and labeled as restricted use because of acute toxicity and undue secondary risk to non-target species. Certified applicators receive training on the importance of following label directions and overall application, and, therefore are more likely to apply the product correctly. Moreover, tracking powder products must bear a strong precautionary statement and new restrictions limiting placement of powder to locations not accessible to children, household pets, and non-target animals.

EPA is also concerned about the potential exposure (inhalation and dermal) to the certified applicators of these types of product formulations. Due to the low inhalation LC₅₀ value and the possibility of users inhaling or ingesting powders during pouring and application, EPA is limiting

use of the powder formulations to use by certified applicators, EPA is requiring protective eyewear and dust/mist respirators for such users in addition to other personal protective equipment.

Within eight months after receipt of this RED document, the EPA is requiring that all products with tracking powder uses, including field and residential uses, containing brodifacoum, bromadiolone, bromethalin, chlorophacinone, and diphacinone and its sodium salt be classified as restricted use pesticides.

(e) Restricted Use for Field Products

All products labeled for field uses, except for those limited to manual underground baiting, must be reclassified and relabeled as restricted use because of acute toxicity and undue secondary risk to non-target species.

(f) Field Uses of Chlorophacinone and Diphacinone and its sodium salts

Within eight months after the receipt of this RED document, all products containing chlorophacinone and diphacinone and its sodium salt -- at active ingredient percentages higher than 0.005% -- must remove all field-use claims from the label. This is required because of acute toxicity and undue secondary risk to non-target species. This requirement does not apply to products limited to manual, underground applications in field situations (pocket gophers and moles), if this limitation is stated clearly and unambiguously on the products' labels.

(g) Time Frames & Reporting Requirements

PHASE ONE: The Agency is aware that all mitigation measures required during Phase One may not be feasible within the eight-month time frame usually accorded by the RED process to submit labeling changes. While registrants will still be required to submit revised labeling as detailed in Section V within the 8 month time frame, the Agency recognizes that the formulation changes required by the addition of the indicator dye and bittering agent may take longer. The timing for the incorporation of the dye and bittering agent in rodenticide products will be an outcome of a meeting convened by the Agency before the first Stakeholder meeting (as discussed below in Phase Two).

Data from the American Association of Poison Control Centers (AAPCC) must be submitted within one year after the end of the reporting year. For example, 1999 AAPCC data must be submitted to the Agency on or before December 31, 2000. The Agency will schedule a meeting with registrants before the initial Stakeholder meeting to provide registrants with clear guidance on the format, content, and parameters of the data obtained from the AAPCC.

(2) Phase Two: Long-Term Risk Reduction

As discussed previously in this RED document, the Agency believes that the required risk mitigation measures outlined in Phase One should be followed by further exposure/risk reduction

measures for rodenticides. EPA is also aware that a safer technology is efficacious and equally effective to eliminate human and household pet exposures may not currently exist. However, the Agency will require the development of and movement into a new, safer household rodenticide use technology. The EPA is convinced that this technology can be developed. Therefore, Phase Two of the Agency's risk mitigation approach, is the requirement to move rodenticides into a safer use technology. To achieve this end, within 90 days of the issuance of the REDs, the Agency will form a Stakeholder group and hold a series of meetings to discuss means of significantly reducing exposures to children and pets. The Stakeholder group will consist of members from industry, states, CDC, CPSC, AAPCC, rodent control experts, members of environmental groups, and the medical community.

The Agency will conclude the Stakeholder process within nine months from the issuance of the REDs. The Agency expects, at the conclusion of this process, to have a recommendation on how to further mitigate risk to children and household pets and an implementation plan to achieve significant risk reduction. Agency ideas include: (a) placing rodenticides in bait containing, disposable (non-refillable), child-resistant bait stations, or some other technology, (b) development and implementation of an exhaustive, educational outreach program for consumers and enhanced training for PCOs, (c) tamper-resistant bait stations, and (d) additional labeling improvements, e.g., foreign language labeling, icons on labeling such as "Mr. Yuk," and skull and crossbones.

c. Risk Mitigation Measures for Products Intended for Occupational Use

(1) Gloves

To reduce dermal exposure, the Agency has determined that all labels for occupational-use products will require commercial handlers to wear gloves while handling these rodenticide chemicals that are not already contained in place packs. This requirement will be overturned if registrants submit data which indicate there is no dermal exposure.

EPA is requiring all occupational handlers (commercial applicators) who handle formulations that are not already contained in place packs to wear gloves.

(2) Protective Eyewear and Inhalation Protection

The Agency has determined that occupational handlers (commercial applicators) must wear protective eyewear, and a dust mask/mist respirator when handling non-parafinized formulations of these chemicals such as, meal or grain-based baits, unless these formulations are contained in place packs or the registrants can determine via data that there is no inhalation exposure. The respirator would reduce the possibility of inhalation and ingestion of dusts resulting from the pouring and application of these products. Moreover, the protective eyewear would reduce the potential ocular absorption that could result from contact with such dusts.

In addition, the Agency is requiring all occupational handlers who handle powder formulations or any other non-paraffinized formulation of chlorophacinone to wear a dust/mist respirator and protective eyewear during open pouring and application unless registrants submit data which indicate there is no inhalation exposure.

There are no handler exposure data available for the use patterns associated with chlorophacinone mixing, loading, and application.

4. Endangered Species Statement

The Agency has developed a program (the “Endangered Species Protection Program”) to identify pesticides whose use may cause adverse impacts on endangered and threatened species, and to implement mitigation measures that will eliminate the adverse impacts. At present, the program is being implemented on an interim basis as described in a Federal Register notice (54 FR 27984-28008, July 3, 1989), and is providing information to pesticide users to help them protect these species voluntarily. As currently planned, the final program will call for label modifications referring to required limitations on pesticide uses, typically as depicted in county-specific bulletins or by other site-specific mechanisms as specified by state partners. A final program, which may be altered from the interim program, will be described in a future Federal Register notice. The Agency is not imposing label modifications at this time through the RED. Rather, any requirements for product use modifications will occur in the future under the Endangered Species Protection Program.

The pesticides included in this RED have been subject to a formal consultation with the Fish and Wildlife Service, as noted following each active ingredient. Additional consultation with the Fish and Wildlife Service and/or the National Marine Fisheries Service may be necessary to determine if steps need to be taken to protect newly listed species or from proposed new uses of these pesticides.

Most of the species determined by the Fish and Wildlife Service to be jeopardized or otherwise potentially affected by these pesticides occur in California, Florida, Hawaii, or Texas. Under the Endangered Species Protection Program, these states are working with the Agency and the Fish and Wildlife Service to provide locally based protection to listed species. Interim protective measures are being implemented or are under development. For the few species in other states, the Agency is developing protective measures to be provided to pesticide users in interim county bulletins.

V. ACTIONS REQUIRED OF REGISTRANTS

This section specifies the data requirements and responses necessary for the reregistration of both manufacturing-use and end-use products.

A. Manufacturing-Use Products

1. Additional Generic Data Requirements

The generic data base supporting the reregistration of brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and salt for the above eligible uses has been reviewed and determined to be substantially complete. The following studies are required to be conducted on the generic ingredients.

a. Brodifacoum

- 21-Day Dermal - rabbit/rat [82-2]
- Estimation of Dermal Exposure at Outdoor Sites [231]
- Estimation of Inhalation Exposure at Outdoor Sites [232]
- Estimation of Dermal Exposure at Indoor Sites [233]
- Estimation of Inhalation Exposure at Indoor Sites [234]

b. Bromadiolone

- Leaching/Adsorption/Desorption [163-1]
- Estimation of Dermal Exposure at Outdoor Sites [231]
- Estimation of Inhalation Exposure at Outdoor Sites [232]
- Estimation of Dermal Exposure at Indoor Sites [233]
- Estimation of Inhalation Exposure at Indoor Sites [234]

c. Bromethalin

- General Metabolism [85-1]
- Leaching/Adsorption/Desorption [163-1]
- Estimation of Dermal Exposure at Outdoor Sites [231]
- Estimation of Inhalation Exposure at Outdoor Sites [232]
- Estimation of Dermal Exposure at Indoor Sites [233]
- Estimation of Inhalation Exposure at Indoor Sites [234]
- Secondary Poisoning, Mammal [70-A-SS]*
- Protocol
- Secondary Poisoning, Bird [70-B-SS]*
- Protocol
- Whole Body Residue, Target Species [70-C-S]*
- Protocol

*Studies are not required for “indoors and along the outside walls of buildings”, but are required for any other uses.

d. Chlorophacinone

- Avian Reproduction, Quail [71-4(a)]*
- Avian Reproduction, Duck [71-4(b)]*
- Estimation of Dermal Exposure at Outdoor Sites [231]
- Estimation of Inhalation Exposure at Outdoor Sites [232]

- Estimation of Dermal Exposure at Indoor Sites [233]
- Estimation of Inhalation Exposure at Indoor Sites [234]
- Secondary Poisoning, Mammal [70-A-SS]**
- Protocol
- Secondary Poisoning, Bird [70-B-SS]**
- Protocol
- Whole Body Residue, Target Species [70-C-S]**
- Protocol

*Required to support Product CAS 90023.

**Studies are not required for “indoors and along the outside walls of buildings,” but are required for any other uses.

e. Diphacinone and its sodium salt

- General Metabolism [85-1]
- Hydrolysis [161-1]
- Leaching/Adsorption/Desorption [163-1]
- Estimation of Dermal Exposure at Outdoor Sites [231]
- Estimation of Inhalation Exposure at Outdoor Sites [232]
- Estimation of Dermal Exposure at Indoor Sites [233]
- Estimation of Inhalation Exposure at Indoor Sites [234]
- Secondary Poisoning, Mammal [70-A-SS]*
- Protocol
- Secondary Poisoning, Bird [70-B-SS]*
- Protocol
- Whole Body Residue, Target Species [70-C-S]*
- Protocol

*Studies are not required for “indoors and along the outside walls of buildings,” but are required for any other uses.

2. Submission of Poison Control Centers Data

Under the authority of FIFRA section 3(c)(2)(B), the Agency is requiring registrants of rodenticides subject to this RED document, to submit to the Agency annual American Association of Poison Control Centers’ (AAPCC) data. The Agency is requiring AAPCC data for the years 1999 through 2009. Registrants are encouraged to share the cost of generating data, whenever appropriate. If needed, the Agency may ask registrants of rodenticides for additional biannual submission of AAPCC data. Data from the American Association of Poison Control Centers (AAPCC) must be submitted within one year after the end of the reporting year. These AAPCC data requirements are identified in the data requirements listed in Appendix B of this RED document. The American Association of Poison Control Centers is located at 3201 New Mexico Avenue, Suite 310, Washington, D.C. 20016. They can be reached by telephone on (202) 362-7217 and by fax on (202) 362-8377.

B. End-Use Products

1. Formulation Changes - Indicator Dye and Bittering Agent

All registrants of rodenticides must incorporate an Agency approved indicator dye and bittering agent into their formulations. All registrants must submit to the Agency for approval, a revised CSF and draft labeling reflecting this incorporation into their product's formulation. The Agency recognizes that the formulation changes required by the addition of the indicator dye and bittering agent may take longer than the eight months usually provided by RED Document. The Agency will work with registrants to establish a timeframe for the incorporation of the dye and bittering agent into rodenticide products at a meeting, or through other means, prior to the initial stakeholder meeting. At this time, deadlines and submittal procedures for additional efficacy testing, if required, will also be addressed.

2. Stakeholder Meetings

The Agency is planning to hold the initial stakeholders meeting within 120 days from the issuance of this RED in Washington, D.C. As mentioned earlier, these meetings will provide an open forum to develop workable mitigation measures to adequately protect children from accidental rodenticide exposures. For these meetings to be most efficient and successful, all interested parties and viewpoints will be welcomed and considered. The outcomes of these meetings will effect all rodenticide products with residential uses, including those that were previously reregistered and those that have been registered more recently and, hence, not subject to reregistration.

3. Tracking Powders Classified as Restricted Use

Within eight months after the receipt of this RED document, the Agency is requiring that all products, containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt, with tracking powder uses, must be reclassified and relabeled as RESTRICTED USE PESTICIDES.

4. Field Use Classified as Restricted Use

Within eight months after the receipt of this RED document, the Agency is requiring that all products, containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt, with field uses, except for those limited to manual underground baiting, must be classified and labeled as RESTRICTED USE PESTICIDES.

5. Field Uses of Chlorophacinone and Diphacinone and its sodium salts

Within eight months after the receipt of this RED document, all products, containing chlorophacinone, and diphacinone and its sodium salt, at active ingredient percentages higher than 0.005%, must remove all field use claims from the label. Products which are limited only to manual underground baiting in a field use situation are excluded from the above requirement and must clearly state this limitation on the product label.

6. Additional Product-Specific Data Requirements

Section 4(g)(2)(B) of FIFRA calls for the Agency to obtain any needed product-specific data regarding the pesticide after a determination of eligibility has been made. Registrants must review previous data submissions to ensure that they meet current EPA acceptance criteria, and if not, commit to conduct new studies. If a registrant believes that previously submitted data meet current testing standards, then study MRID numbers should be cited according to the instructions in the Requirement Status and Registrants Response Form provided for each product.

7. PPE/Engineering Control Requirements for Pesticide Handlers

For sole active ingredient end-use products that containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt:

- Revise the product labeling to adopt the handler personal protective equipment/engineering control requirements set forth in this section.
- Remove any conflicting PPE requirements on the current labeling.

a. Products Intended for Occupational Use

The Agency is requiring modifications to the PPE/Engineering Controls requirements on all end-use products containing brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt that are intended primarily for occupational use.

(1) Formulation Specific PPE Requirements

The Agency is establishing formulation-specific PPE for all occupational uses of brodifacoum, bromethalin, bromadiolone, chlorophacinone, and diphacinone and its sodium salt end-use products. Remove any conflicting PPE requirements on the current labeling by eliminating the less stringent requirement. For guidance on choosing glove material, contact the Chemical Review Manager for the specific chemical in question. Please refer to Table 71 for the specific label language required.

(2) Determining PPE Labeling Requirements for End-Use Products

The PPE that would be established on the basis of the acute toxicity category of the end-use product must be compared to the active ingredient specific personal protective equipment specified above. The more protective PPE must be placed on the product labeling.

For guidance on which PPE is more protective, see PR Notice 93-7.

(3) Placement in Labeling

The personal protective equipment requirements must be placed on the end-use product labeling in the location specified in PR Notice 93-7, and the language of the PPE requirements must be the same as is specified in PR Notice 93-7.

b. Products Intended for Residential Use

The Agency is not establishing any formulation-specific engineering control or handler PPE requirements for end-use products intended primarily for homeowner use.

8. Other End-Use Product Labeling Requirements

a. All End-Use Products

Labels which currently allow placement of rat and mouse baits “in and around buildings” must be amended to “indoors and against the outside walls of buildings.” Rat and mouse bait placements will be allowed “around buildings” only if registrants demonstrate from secondary toxicity studies that risks to birds and mammals are minimal.

All end-use products should have clear, concise and complete labeling instructions. Proper labels can improve reader understanding, thereby reducing misuse and the potential for incidents. Toward this end, the Agency is requiring the labeling modifications listed below.

(1) Directions for Use

Directions for Use must be stated in terms that can be easily read and understood by the average person likely to use or to supervise the use of the pesticide. It must be presented in a format that is easy to understand and follow. The Directions for Use section of a pesticide label must provide the necessary information to answer four major categories regarding the use of the pesticide. These four questions are:

- 1) Why is the pesticide being used? For what pest(s) or problem?
- 2) Where is the pesticide to be applied? (Where should it not be applied?)
- 3) How is the pesticide to be applied (what special precautions must the user take? how much should they use?)
- 4) When should the pesticide be applied?

"DIRECTIONS FOR USE" for products covered by this RED should be organized in the format generally used for rodenticide products registered in the U.S. This format is outlined below and appears in format labels such as the one appended to PR Notice 94-7.

DIRECTIONS FOR USE

It is a violation of Federal law to use this product in a manner inconsistent with its labeling.

READ THIS LABEL: Read this entire label and follow all use directions and use precautions.

IMPORTANT: [Insert text from PR Notice 94-7 which applies only to products used to control commensal rodents, and to end-use concentrates used to make baits, which may be used to control commensal rodents in and around buildings.]

MIXING DIRECTIONS: [This section applies only to end-use concentrates.]

USE RESTRICTIONS: [Indicate the species for which control is claimed, the sites where the product may be used, general restrictions and precautions on use, and any special seasonal, geographical, or other prohibitions. Requirements for protective clothing and equipment may be stipulated here or under "**MIXING DIRECTIONS:**" or "**APPLICATION DIRECTIONS:**", if more appropriate.]

SELECTION OF TREATMENT AREAS: [This section applies only to products used to control commensal rodents in and around buildings. Text on current labels should be retained.]

APPLICATION DIRECTIONS: [Indicate the correct placement amounts or rates for product application and the specific procedures required for such applications. Add information on follow-up treatments and surveillance of treated areas as appropriate.]

When preparing labels, be sure that this basic format is preserved to ensure that it is clear to readers that all of the subsections indicated above are part of the "**DIRECTIONS FOR USE**".

For products claimed to control a variety of different vertebrate pests, the "**DIRECTIONS FOR USE**" may be subdivided by species groupings. If the same basic set of "**USE RESTRICTIONS:**" applies to all species groupings for which control is claimed, this subdividing should occur at the "**APPLICATION DIRECTIONS:**" level.

If one set of "**USE RESTRICTIONS:**" is not appropriate for all site/pest combinations claimed, such as might occur if certain sites or application methods were permitted or appropriate for only some of the pests claimed, subdivision of the "**DIRECTIONS FOR USE**" should occur at the "**USE RESTRICTIONS:**" level, with each site-pest grouping having separate "**USE RESTRICTIONS:**", "**MIXING DIRECTIONS**" (if appropriate), and "**APPLICATION DIRECTIONS**".

For labels which claim control of commensal rodents "in and around buildings" and other site/pest combinations, the subdivision pertaining to commensal rodent control must include the specific bait protection text indicated in PR Notice 94-7, except that the "It is a violation ..." and "**READ THIS LABEL: ...**" text may directly precede the subheading which sets directions for controlling commensal rodents in and around buildings apart from the remainder of the "**DIRECTIONS FOR USE**".

(2) First Aid (Statement of Practical Treatment)

The Agency is requiring that all labels with Statement of Practical Treatment sections be amended so that these sections are entitled, "First Aid." First aid statements must be brief, clear, simple and in straightforward language so that the average person can easily and quickly understand the instructions. These statements should be appropriate for all ages or, when necessary, should include distinctions between the treatments for different ages. Once the Agency has reviewed the data submitted for the RED, it may require additional changes to the "FIRST AID" or "NOTE TO PHYSICIAN" statement."

Under Note to Physicians, many of the labels recommend that Vitamin K₁ be administered intravenously (IV) or intramuscularly (IM). The veterinary literature states that vitamin K₁ can cause anaphylactic reactions if given IV and extensive hemorrhage after IM administration. Sheldon Wagner, M.D., a consultant to OPP, confirmed that Vitamin K₁ should not be given IV unless there is a hemorrhagic crisis. IM administration is acceptable in humans. The recommendation for IV administration must be deleted from the label.

(3) Note to Veterinarian

The Agency is requiring that all labels include a section entitled, "Note to Veterinarian" which reads: "Contains [active ingredient], an anticoagulant with a half-life in the dog of [give number, if known] days. For dogs that have ingested or that are suspected of having ingested [active ingredient], and/or have obvious poisoning symptoms, such as [list major ones, such as bleeding] or have lowered prothrombin times, give [name of antidotal material] as follows: [treatment advice]. For anticoagulants with long half-lives, if known, it might be necessary to check prothrombin times every 3 days until values return to normal.] See 'Note to Physician' for additional information."

(4) PR Notice 94-7

All registrants of rodenticides within eight months after receipt of this RED document, must be in compliance with the labeling requirements outlined in PR Notice 94-7, Notice to Manufacturers, Formulators, Registrants and Users of Pesticides, dated September 16, 1994, if they have not already done so. Any rodenticide products not in compliance will be referred to EPA's Office of Enforcement and Compliance Assurance for action.

C. Required Labeling Changes

Table 71 - Required Labeling Changes

Description	Required Labeling	Placement
Manufacturing use		
	“Only for formulation into a rodenticide for the following use(s) [fill blank only with those uses that are being supported by MP registrant].”	Directions for Use
One of these statements may be added to a label to allow reformulation of the product for a specific use or all additional uses supported by a formulator or user group	“This product may be used to formulate products for specific use(s) not listed on the MP label if the formulator, user group, or grower has complied with U.S. EPA submission requirements regarding support of such use(s).”	
	“This product may be used to formulate products for any additional use(s) not listed on the MP label if the formulator, user group, or grower has complied with U.S. EPA submission requirements regarding support of such use(s).”	
Products Intended Primarily for Homeowner/Residential Use (generally, not marketed for use by professional applicators)		
Indoor sites	“For use in non- food/non-feed areas. Do not contaminate human or pet food preparation items or areas. Do not place near or inside ventilation duct openings.”	Use Restriction section in Directions for Use
Products Intended Primarily for Occupational Use (generally, not marketed for use by homeowners)		
	“Do not apply this product in a way that will contact workers or other persons, either directly or through drift. Only protected handlers may be in the area during application. Keep all other persons out of the treated area during application.”	Use Restriction section in Directions for Use
	“Follow manufacturer's instructions for cleaning/maintaining PPE. If no such instructions for washables, use detergent and hot water. Keep and wash PPE separately from other laundry.”	Hazards to Humans (and domestic animals)
	“Users should remove PPE immediately after handling this product. Wash the outside of gloves before removing. As soon as possible, wash thoroughly and change into clean clothing.”	
	“Any person who retrieves carcasses or unused bait following application of this product must wear gloves.”	
Concentrate formulations that must be diluted prior to use (includes wettable powders and dusts, but does not apply to tracking powders)	“All handlers (including mixers, loaders and applicators) must wear: -- long-sleeve shirt and long pants, -- shoes plus socks, -- gloves, and mixers and loaders must wear a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C) and protective eyewear.”	Hazards to Humans (and domestic animals)

Description	Required Labeling	Placement
Tracking powder formulations	“All handlers, including mixers/loaders and applicators, must wear: -- long sleeve shirt and long pants, -- shoes plus socks, -- gloves, -- a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C), and -- protective eyewear.”	Hazards to Humans (and domestic animals)
Tracking powder formulations	“Tracking powder must be placed in locations not accessible to children, pets, domestic animals or non-target wildlife. If using this product in agricultural buildings where livestock feeds are stored, or in commercial food service, food manufacturing or food processing establishments, limit treatments to concealed, inaccessible places such as spaces between floors and walls. Do not apply tracking powder along walls, in corners or in open floor areas of rooms in which food or feed is handled or stored. Do not place tracking powder in areas where there is a possibility of contaminating water, food, feedstuffs, food or feed handling equipment, or milk or meat handling equipment or surfaces that come in direct contact with food. Do not place near or inside ventilation duct openings.”	Use Restriction section in Directions for Use
Pellets or bait formulations	“All handlers, including loaders and applicators, must wear: -- long sleeve shirt and long pants, -- shoes plus socks, and -- gloves. In addition, persons loading the pellets or baits into aircraft or mechanical ground equipment and persons loading/applying with a hand-pushed or hand-held equipment, such as a push-type spreader or cyclone spreader, must wear a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C) and protective eyewear.”	Hazards to Humans (and domestic animals)
End-use pellet or premade bait formulation with an acute inhalation toxicity in Category I or II	“All handlers (including mixers, loaders and applicators) must wear: -- long-sleeve shirt and long pants, -- shoes plus socks, -- gloves, -- a dust/mist filtering respirator (MSHA/NIOSH approval number prefix TC-21C)”	Hazards to Humans (and domestic animals)
Products mixed or applied via equipment	“Do not contaminate water when disposing of equipment wash water or rinsate.”	Environmental Hazard Statement
For use in indoor commercial establishments (does not apply to tracking powders)	“Do not use in edible product areas of food or feed processing plants, restaurants or other areas where food or feed is commercially prepared or processed. Do not contaminate food/feed or food/feed handling equipment or place near or inside ventilation duct openings.”	Use Restriction section in Directions for Use
Products with Crop Uses (required to maintain non-food classification)		
Orchards/ groves	“Apply after harvest or anytime during the dormant season, but before tree growth begins in the Spring. Do not broadcast over non-orchard/non-grove crops. Do not graze animals on treated areas.”	Use Restriction section in Directions for Use
All Products		

Description	Required Labeling	Placement
Products labeled allowing placement “in and around buildings”	Products must be relabeled to read: “indoors and against the outside walls of buildings”	Directions for Use
	“For information on this pesticide product (including health concerns, medical emergencies, or pesticide incidents), call the National Pesticide Telecommunications Network at 1-800-858-7378.” “Do not apply this product by any method not specified on this label.”	Directions For Use
	“Users should wash hands before eating, drinking, chewing gum, using tobacco, or using the toilet.” “Users should remove clothing immediately if pesticide gets inside. Then wash thoroughly and put on clean clothing.”	User Safety Recommendations (directly below Hazards to Humans)
	“Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high-water mark.” “Dogs and other predatory and scavenging mammals might be poisoned if they feed upon animals that have eaten this bait.”	Environmental Hazard Statements
	“Contains [active ingredient], an anticoagulant with a half-life in the dog of [give number, if known] days. For dogs that have ingested or that are suspected of having ingested [active ingredient], and/or have obvious poisoning symptoms, such as [list major ones, such as bleeding] or have lowered prothrombin times, give [name of antidotal material] as follows: [treatment advice]. For anticoagulants with long half-lives, if known, it might be necessary to check prothrombin times every 3 days until values return to normal.] See ‘Note to Physician’ for additional information.”	Note To Veterinarian

D. Existing Stocks

Registrants may generally distribute and sell products bearing old labels/labeling for 26 months from the date of the issuance of this Reregistration Eligibility Decision (RED). Persons other than the registrant may generally distribute or sell such products for 50 months from the date of the issuance of this RED. However, existing stocks time frames will be established case-by-case, depending on the number of products involved, the number of label changes, and other factors. Refer to "Existing Stocks of Pesticide Products; Statement of Policy"; Federal Register, Volume 56, No. 123, June 26, 1991.

The Agency has determined that registrants may distribute and sell brodifacoum, bromethalin, bromadiolone, chlorophacinone, diphacinone and its sodium salt products bearing old labels/labeling for 26 months from the date of issuance of this RED. Persons other than the registrant may distribute or sell such products for 50 months from the date of the issuance of this RED. Registrants and persons other than registrants remain obligated to meet pre-existing Agency imposed label changes and existing stocks requirements applicable to products they sell or distribute.

VI. APPENDICES

US EPA ARCHIVE DOCUMENT

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Use Group: INDOOR FOOD

Use Group: INDOOR FOOD

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Use Group: TERRESTRIAL NON-FOOD CROP

Use Group: INDOOR NON-FOOD

[illegible]

NON-FOOD/NON-FEED (con't)

AGRICULTURAL/FARM PREMISES (con't) Use Group: INDOOR NON-FOOD (con't)

P/T NA UC * NS NS NS NS NS NS CAC

3.350E-06 lb *

ft interval

Use Group: INDOOR NON-FOOD

B/S	NA	2.513E-06 lb	*	NS	NS	NS	NS	NS	NS	C93, CAC
		ft interval								

B/S	NA	3.750E-05 lb	*	NS	NS	NS	NS	NS	NS	C93, CAT
		location								

B/S	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC
		3.350E-06 lb	*							
		ft interval								

Use Group: INDOOR NON-FOOD

Bait application, When needed, Bait box	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	AN	NS	C93
		ft interval									

B/S	NA	2.513E-06 lb	*	NS	NS	NS	NS	NS	NS	C93, CAC
		ft interval								

B/S	NA	3.750E-05 lb	*	NS	NS	NS	NS	NS	NS	C93, CAT
		location								

US EPA ARCHIVE DOCUMENT

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NON-FOOD/NON-FEED (con't)

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B/S	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC
		.00005 lb	*							
		station								

B/S	NA	2.344E-06 lb	*	NS	NS	NS	NS	NS	NS	CAT
		ft interval								

P/T	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC
		3.350E-06	lb	*						
		ft interval								

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
Bait box	ft interval	6.250E-06 lb	*						
	station								

G	NA	1.013E-05 lb	*	NS	NS	NS	NS	NS	NS
		1K sq.ft							

COMMERCIAL/INSTITUTIONAL/INDUSTRIAL PREMISES/EQUIPMENT (OUTDOOR) Use Group: TERRESTRIAL NON-FOOD CROP

Bait application, When needed, Bait box	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	AN	NS	C93
		ft interval									

B/S	NA	2.513E-06 lb	* NS	NS	NS	NS	NS	NS	NS	C93, CAC
		ft interval								

B/S	NA	3.750E-05 lb	*	NS	NS	NS	NS	NS	NS	C93, CAT
		location								

B/S	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC
		.00005 lb	*							
		station								

P/T	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC
		3.350E-06	lb	*						
		ft interval								

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NON-FOOD/NON-FEED (con't)

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
Bait box	ft interval								

G	NA	1.013E-05 lb	*	NS	NS	NS	NS	NS	NS
		1K sq.ft							

Use Group: INDOOR RESIDENTIAL

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
Bait box	ft interval								

Use Group: INDOOR RESIDENTIAL

Bait application, When needed, Bait box	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	AN	NS	C93
		ft interval									
	B/S	NA	2.513E-06 lb	*	NS	NS	NS	NS	NS		C93, CAC
	B/S	NA	3.750E-05 lb	*	NS	NS	NS	NS	NS		C93, CAT
	B/S	NA	UC	*	NS	NS	NS	NS	NS		CAC
	B/S	NA	1.172E-06 lb	*	NS	NS	NS	NS	NS		CAT
	P/T	NA	UC	*	NS	NS	NS	NS	NS		CAC
			3.350E-06 lb	*							
			ft interval								

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
Bait box	ft interval 6.250E-06 lb station	*							

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NON-FOOD/NON-FEED (con't)

HOUSEHOLD/DOMESTIC DWELLINGS INDOOR PREMISES (con't) Use Group: INDOOR RESIDENTIAL (con't)

HOUSEHOLD/DOMESTIC DWELLINGS OUTDOOR PREMISES Use Group: OUTDOOR RESIDENTIAL

P/T	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC
		3.350E-06 lb	*							
		ft interval								

G	NA	1.013E-05 lb	*	NS	NS	NS	NS	NS	NS
		1K sq.ft							

PUBLIC BUILDINGS/STRUCTURES (VERT. PEST CONTROL) Use Group: INDOOR NON-FOOD

B/S	NA	3.750E-05 lb	*	NS	NS	NS	NS	NS	NS	C93, CAT
		location								

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NON-FOOD/NON-FEED (con't)

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PUBLIC BUILDINGS/STRUCTURES (VERT. PEST CONTROL) (con't) Use Group: INDOOR NON-FOOD (con't)

B/S	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC

3.350E-06 lb *
ft interval

SEWAGE SYSTEMS

Use Group: AQUATIC NON-FOOD INDUSTRIAL

Bait application, When needed, Tether	B/S	NA	UC	*	NS	NS	NS	NS	NS	NS	CAC

USE 70001 OR 70009

Use Group: INDOOR NON-FOOD

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
Bait box	ft interval								

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HEADER ABBREVIATIONS

Max. Appl. Rate (AI unless : Maximum dose for a single application to a single site. System calculated.
noted otherwise)

Max. # Apps @ Max. Rate : Maximum number of Applications at Maximum Dosage Rate. Example: "4 applications per year" is expressed as "4/1 yr"; "4 applications per 3 years" is expressed as "4/3 yr"

Max. Dose [(AI unless : Maximum dose applied to a site over a single crop cycle or year. System calculated.
noted otherwise)/A]

Re-Entry Intv. : Reentry Intervals

PRD Report Date : LUIS contains all products that were active or suspended (and that were available from OPP Document Center) as of this date. Some products registered after this date may have data included in this report, but LUIS does not guarantee that all products registered after this date have data that has been captured.

* : Non-specific

C : Coarse

M : Medium

F : Fine

O : Others

B/S : BAIT/SOLID

G : GRANULAR

P/T : PELLETED/TABLETED

AN : As Needed

NA : Not Applicable

NS : Not Specified (on label)

UC : Unconverted due to lack of data (on label), or with one of following units: bag, bait, bait block, bait pack, bait station, bait station(s), block, briquet, briquets, bursts, cake, can, canister, capsule, cartridges, coil, collar, container, dispenser, drop, eartag, grains, lure, pack, packet, packets, pad, part, parts, pellets, piece, pieces, pill, pumps, sec, sec burst, sheet, spike, stake, stick, strip, tab, tablet, tablets, tag, tape, towelette, tray, unit, --

DCNC : Dosage Can Not be Calculated

No Calc : No Calculation can be made

W : PPM calculated by weight

V : PPM Calculated by volume

U : Unknown whether PPM is given by weight or by volume

cwt : Hundred Weight

nnE-xx : nn times (10 power -xx); for instance, "1.234E-04" is equivalent to ".0001234"

USE LIMITATIONS CODES

C93 : Do not apply directly to water.

CAC : Keep out of lakes, streams, and ponds.

CAT : Do not place in locations accessible to children, pets or domestic animals.

* NUMBER IN PARENTHESES REPRESENTS THE NUMBER OF TIME UNITS (HOURS,DAYS, ETC.) DESCRIBED IN THE LIMITATION.

UNIT DESCRIPTIONS

ft interval : Not in LUIS Unit Conversion Vocabulary File

lb : pound

location :

sq.ft : square foot

station :

[illegible][illegible]

FOOD/FEED USES

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AGRICULTURAL/FARM PREMISES Use Group: INDOOR FOOD

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	2.931E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval								

P/T	NA	3.350E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		ft interval								

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
Bait box	ft interval									

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS	
		ft interval								

COMMERCIAL TRANSPORTATION FACILITIES-FEED/FOOD-EMPTY Use Group: INDOOR FOOD

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC
		3.350E-06	lb	*						
		ft interval								

COMMERCIAL TRANSPORTATION FACILITIES-FEED/FOOD-FULL Use Group: INDOOR FOOD

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FOOD/FEED USES (con't)

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Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T NA UC * NS NS NS NS 10 NS CAC
3.350E-06 lb *
ft interval

HOUSEHOLD/DOMESTIC DWELLINGS INDOOR FOOD HANDLING AREAS Use Group: INDOOR FOOD

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC
		3.350E-06	lb	*						
		ft interval								

NON-FOOD/NON-FEED

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AGRICULTURAL UNCULTIVATED AREAS Use Group: TERRESTRIAL NON-FOOD CROP

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

[illegible]

NON-FOOD/NON-FEED (con't)

	FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC
	FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC
	P/T	NA	3.350E-06 lb ft interval	*	NS	NS	NS	NS	10	NS	CAC

B/S	NA	3.141E-06 lb	*	NS	NS	NS	NS	NS	NS
		ft interval							

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC
		3.350E-06	lb	*						
		ft interval								

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

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NON-FOOD/NON-FEED (con't)

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COMMERCIAL TRANSPORTATION FACILITIES-NONFEED/NONFOOD Use Group: INDOOR NON-FOOD

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	3.350E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		ft interval								

COMMERCIAL/INSTITUTIONAL/INDUSTRIAL PREMISES/EQUIP. (INDOOR) Use Group: INDOOR NON-FOOD

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T NA UC * NS NS NS NS 10 NS CAC

3.350E-06 lb *
ft interval

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
		ft interval							

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS	CAC
		ft interval								

[illegible]

NON-FOOD/NON-FEED (con't)

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	3.350E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		ft interval								

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
Bait box	ft interval									

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
		ft interval							

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS	CAC
		ft interval								

HOUSEHOLD/DOMESTIC DWELLINGS INDOOR NONFOOD HANDLING AREAS Use Group: INDOOR RESIDENTIAL

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T NA UC * NS NS NS NS 10 NS CAC
3.350E-06 lb *
ft interval

[illegible][illegible]

NON-FOOD/NON-FEED (con't)

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Bait application, When needed, By hand	B/S	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
Bait box	ft interval									

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
		ft interval							

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS	CAC
		ft interval								

HOUSEHOLD/DOMESTIC DWELLINGS OUTDOOR PREMISES Use Group: INDOOR NON-FOOD

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

Use Group: OUTDOOR RESIDENTIAL

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

[illegible]

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NON-FOOD/NON-FEED (con't)

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FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

[illegible]

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
		ft interval							

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS	CAC
		ft interval								

PUBLIC BUILDINGS/STRUCTURES (VERT. PEST CONTROL) Use Group: INDOOR NON-FOOD

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

URBAN AREAS Use Group: TERRESTRIAL NON-FOOD CROP

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

[illegible][illegible]

NON-FOOD/NON-FEED (con't)

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Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
Bait box	ft interval									

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS	CAC
		ft interval								

Bait application, When needed, By hand	B/S	NA burrow	1.250E-05 lb	*	NS	NS	NS	NS	NS	NS

[illegible]

Bait station. Use code BAB, When needed, B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
Bait box	ft interval									

B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	NS	NS
		ft interval							

B/S	NA	3.141E-06 lb	*	NS	NS	NS	NS	NS	NS	CAC
		ft interval								

Bait application, When needed, By hand	B/S	NA	3.350E-06 lb	*	NS	NS	NS	NS	1	NS	CAC
		ft interval									

Case 2760 [Bromadiolone] Chemical 112001 [Bromadiolone]

SITE Application Type, Application Timing, Application Equipment) Surface Type (Antimicrobial only) & Efficacy Influencing Factor (Antimicrobial only)	Form(s) Min. Appl. Rate (AI unless noted otherwise)	Min. Appl. Rate (AI unless noted otherwise)	Soil Max. # Apps @ Max. Rate unless noted otherwise)	Max. Dose [(AI Min. Interv Entry Allowed (days) Intv. cycle	Geographic Limitations Disallowed Codes	Use Limitations

NON-FOOD/NON-FEED (con't)

))))))))))

WIDE AREA/GENERAL INDOOR TREATMENT (con't) Use Group: INDOOR NON-FOOD (con't)

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC
		3.350E-06 lb	*							
		ft interval								

WIDE AREA/GENERAL OUTDOOR TREATMENT (PUBLIC HEALTH USE) Use Group: TERRESTRIAL NON-FOOD CROP

[illegible]

B/S	NA	3.333E-06 lb	*	NS	NS	NS	NS	10	NS	CAC
		linear ft								

FM?	NA	UC	*	NS	NS	NS	NS	1	NS	CAC

FM?	NA	UC	*	NS	NS	NS	NS	10	NS	CAC

P/T	NA	UC	*	NS	NS	NS	NS	10	NS	CAC
		3.350E-06 lb	*							
		ft interval								

[illegible]

444444

HEADER ABBREVIATIONS

Max. Appl. Rate (AI unless : Maximum dose for a single application to a single site. System calculated.
noted otherwise)

Max. # Apps @ Max. Rate : Maximum number of Applications at Maximum Dosage Rate. Example: "4 applications per year" is expressed as "4/1 yr"; "4 applications per 3 years" is expressed as "4/3 yr"

Min. Interv (days) : Minimum Interval between Applications (days)

PRD Report Date : LUIS contains all products that were active or suspended (and that were available from OPP Document Center) as of this date. Some products registered after this date may have data included in this report, but LUIS does not guarantee that all products registered after this date have data that has been captured.

* : Non-specific

M : Medium

F : Fine

Q : Other

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B/S : BAIT/SOLID

FM? : FORM NOT IDENTIFIED

P/T : PELLETED/TABLETED

AN : As Needed

NA : Not Applicable

NS : Not Specified (on label)

UC : Unconverted due to lack of data (on label), or with one of following units: bag, bait, bait block, bait pack, bait station, bait station(s), block, briquet, briquets, bursts, cake, can, canister, capsule, cartridges, coil, collar, container, dispenser, drop, eartag, grains, lure, pack, packet, packets, pad, part, parts, pellets, piece, pieces, pill, pumps, sec, sec burst, sheet, spike, stake, stick, strip, tab, tablet, tablets, tag, tape, towelette, tray, unit, --

DCNC : Dosage Can Not be Calculated

No Calc : No Calculation can be made

W : PPM calculated by weight

V : PPM Calculated by volume

U : Unknown whether PPM is given by weight or by volume

cwt : Hundred Weight

nnE-xx : nn times (10 power -xx); for instance, "1.234E-04" is equivalent to ".0001234"

USE LIMITATIONS CODES

CAC : Keep out of lakes, streams, and ponds.

* NUMBER IN PARENTHESES REPRESENTS THE NUMBER OF TIME UNITS (HOURS,DAYS, ETC.) DESCRIBED IN THE LIMITATION.

UNIT DESCRIPTIONS

burrow :

ft interval : Not in LUIS Unit Conversion Vocabulary File

lb : pound

linear ft : linear foot

GUIDE TO APPENDIX B

Appendix B contains listings of data requirements which support the reregistration for active ingredients within the case 2665 covered by this Reregistration Eligibility Decision Document. It contains generic data requirements that apply to Rodenticide Cluster active ingredients in all products, including data requirements for which a "typical formulation" is the test substance.

The data table is organized in the following format:

1. Data Requirement (Column 1). The data requirements are listed in the order in which they appear in 40 CFR Part 158. the reference numbers accompanying each test refer to the test protocols set in the Pesticide Assessment Guidelines, which are available from the National Technical Information Service, 5285 Port Royal Road, Springfield, VA 22161 (703) 487-4650.

2. Use Pattern (Column 2). This column indicates the use patterns for which the data requirements apply. The following letter designations are used for the given use patterns:

A	Terrestrial food
B	Terrestrial feed
C	Terrestrial non-food
D	Aquatic food
E	Aquatic non-food outdoor
F	Aquatic non-food industrial
G	Aquatic non-food residential
H	Greenhouse food
I	Greenhouse non-food
J	Forestry
K	Residential
L	Indoor food
M	Indoor non-food
N	Indoor medical
O	Indoor residential

3. Bibliographic citation (Column 3). If the Agency has acceptable data in its files, this column lists the identifying number of each study. This normally is the Master Record Identification (MRID) number, but may be a "GS" number if no MRID number has been assigned. Refer to the Bibliography appendix for a complete citation of the study.

APPENDIX B

Data Supporting Guideline Requirements for the Reregistration of Brodifacoum

REQUIREMENT		USE PATTERNS	CITATION(S)
PRODUCT CHEMISTRY			
61-1	Chemical Identity	All	129706
61-2A	Start. Mat. & Mnfg. Process	All	129706
61-2B	Formation of Impurities	All	129706
62-1	Preliminary Analysis	All	129706
62-2	Certification of limits	All	129706
62-3	Analytical Method	All	129706
63-2	Color	All	41892201
63-3	Physical State	All	41892201
63-5	Melting Point	All	41892201, 41892202
63-7	Density	All	41892201
63-8	Solubility	All	41892201, 41892202
63-9	Vapor Pressure	All	41892202
63-11	Octanol/Water Partition	All	41892202
63-12	pH	All	41892201
63-13	Stability	All	41892201
ECOLOGICAL EFFECTS			
71-1A	Acute Avian Oral - Quail/Duck	C, F, K	41563303
71-2A	Avian Dietary - Quail	C, F, K	124477
71-2B	Avian Dietary - Duck	C, F, K	124476
72-1A	Fish Toxicity Bluegill	C, F, K	124472
72-1C	Fish Toxicity Rainbow Trout	C, F, K	88011
72-2A	Invertebrate Toxicity	C, F, K	128442

Data Supporting Guideline Requirements for the Reregistration of Brodifacoum

REQUIREMENT		USE PATTERNS	CITATION(S)
<u>TOXICOLOGY</u>			
81-1	Acute Oral Toxicity - Rat	All	42687501, 4021701
81-2	Acute Dermal Toxicity - Rabbit/Rat	All	42223201, 44021702
81-3	Acute Inhalation Toxicity - Rat	All	43110501
81-4	Primary Eye Irritation - Rabbit	All	66938
81-5	Primary Dermal Irritation - Rabbit	All	44021703
83-3A	Developmental Toxicity - Rat	L	52443, 40307202, 42641902
83-3B	Developmental Toxicity - Rabbit	L	52442, 40307201
85-1	General Metabolism	L	80235, 42007502, 42596801, 44021705
86-1	Domestic Animal Safety		42007501
<u>ENVIRONMENTAL FATE</u>			
161-1	Hydrolysis	C, F, K	42237701
162-1	Aerobic Soil Metabolism	C, K	42579401
163-1	Leaching/Adsorption/Desorption	C, F, K	42024501, 42568301

Data Supporting Guideline Requirements for the Reregistration of Bromadiolone

REQUIREMENT		USE PATTERN	CITATION(S)
<u>PRODUCT CHEMISTRY</u>			
61-1	Chemical Identity	All	41717001, 41884701
61-2A	Start. Mat. & Mnfg. Process	All	41717001, 41884701
61-2B	Formation of Impurities	All	41690802, 41717001
62-1	Preliminary Analysis	All	41514101, 41717002
62-2	Certification of limits	All	41514101, 41717002
62-3	Analytical Method	All	41514101, 41717002, 41849601
63-2	Color	All	41849601, 42395901, 42667801
63-3	Physical State	All	41849601, 42395901, 42667801
63-4	Odor	All	41849601, 42395901, 42667801
63-5	Melting Point	All	42395901, 42667801
63-7	Density	All	41849601, 42395901, 42667801
63-8	Solubility	All	42395901, 42667801
63-9	Vapor Pressure	All	42395901, 42667801
63-11	Octanol/Water Partition	All	42395901, 42667801
63-13	Stability	All	42395901, 42667801
<u>ECOLOGICAL EFFECTS</u>			
71-1A	Acute Avian Oral - Quail/Duck	C, K	257770, 41707301
71-2A	Avian Dietary - Quail	C, K	257770
71-2B	Avian Dietary - Duck	C, K	249995, 257770
72-1A	Fish Toxicity Bluegill	C, K	232567
72-1C	Fish Toxicity Rainbow Trout	C, K	232567
72-2A	Invertebrate Toxicity	C, K	232567

Data Supporting Guideline Requirements for the Reregistration of Bromadiolone

REQUIREMENT		USE PATTERN	CITATION(S)
<u>TOXICOLOGY</u>			
81-1	Acute Oral Toxicity - Rat	All	41900001
81-2	Acute Dermal Toxicity - Rabbit/Rat	All	42673701
81-3	Acute Inhalation Toxicity - Rat	All	41976901
81-4	Primary Eye Irritation - Rabbit	All	88113
81-5	Primary Dermal Irritation - Rabbit	All	88112
81-6	Dermal Sensitization - Guinea Pig	All	41847401
82-1A	90-Day Feeding - Rodent	L	107035
82-1B	90-Day Feeding - Non-rodent	L	92196013
83-3A	Developmental Toxicity - Rat	L	92196014
83-3B	Developmental Toxicity - Rabbit	L	92196015
85-1	General Metabolism	L	42596801
86-1	Domestic Animal Safety		42093301
<u>ENVIRONMENTAL FATE</u>			
161-1	Hydrolysis	C, K	42237501
162-1	Aerobic Soil Metabolism	C, K	43594301
163-1	Leaching/Adsorption/Desorption	C, K	161972, 161973, 161988, 42237501, 43000702, 43594301

Data Supporting Guideline Requirements for the Reregistration of Bromethalin

REQUIREMENT		USE PATTERN	CITATION(S)
<u>PRODUCT CHEMISTRY</u>			
61-1	Chemical Identity	All	42333401, 42403001
61-2A	Start. Mat. & Mnfg. Process	All	40617001, 42333401
61-2B	Formation of Impurities	All	42333401, 42403001
62-1	Preliminary Analysis	All	26519, 86718, 86719, 40797401, 42403002
62-2	Certification of limits	All	42433401
62-3	Analytical Method	All	42403002
63-2	Color	All	41599601
63-3	Physical State	All	41599601
63-4	Odor	All	41599601
63-5	Melting Point	All	41599601
63-7	Density	All	41599601
63-9	Vapor Pressure	All	41979600
63-11	Octanol/Water Partition	All	41599603
<u>ECOLOGICAL EFFECTS</u>			
71-1A	Acute Avian Oral - Quail/Duck	All	86741, 246173
71-2A	Avian Dietary - Quail	All	86745
71-2B	Avian Dietary - Duck	All	26526
72-1A	Fish Toxicity Bluegill	All	42733501
72-1C	Fish Toxicity Rainbow Trout	All	42733502
72-2A	Invertebrate Toxicity	All	86751, 42733503

Data Supporting Guideline Requirements for the Reregistration of Bromethalin

REQUIREMENT		USE PATTERN	CITATION(S)
<u>TOXICOLOGY</u>			
81-1	Acute Oral Toxicity - Rat	All	26524, 241521, 246172
81-2	Acute Dermal Toxicity - Rabbit/Rat	All	26524
81-3	Acute Inhalation Toxicity - Rat	All	26524
81-4	Primary Eye Irritation - Rabbit	All	26524
81-5	Primary Dermal Irritation - Rabbit	All	26524
81-6	Dermal Sensitization - Guinea Pig	All	41653001
81-7	Acute Delayed Neurotoxicity - Hen	All	101543
82-1A	90-Day Feeding - Rodent	All	43582102
82-1B	90-Day Feeding - Non-rodent	All	43582101
82-5B	90-Day Neurotoxicity - Mammal	All	42793101
83-3B	Developmental Toxicity - Rabbit	All	86731, 101545
85-1	General Metabolism	All	4724
86-1	Domestic Animal Safety	All	42759602, 42759603, 42759604
<u>ENVIRONMENTAL FATE</u>			
161-1	Hydrolysis	All	42438701
162-1	Aerobic Soil Metabolism	All	43007901

Data Supporting Guideline Requirements for the Reregistration of Chlorophacinone

REQUIREMENT		USE PATTERN	CITATION(S)
PRODUCT CHEMISTRY			
61-1	Chemical Identity	All	Other Submissions
61-2A	Start. Mat. & Mnfg. Process	All	Other Submissions
61-2B	Formation of Impurities	All	Other Submissions
62-1	Preliminary Analysis	All	41922901
62-2	Certification of limits	All	41922901
62-3	Analytical Method	All	41922901
63-2	Color	All	42237401
63-3	Physical State	All	42237401
63-4	Odor	All	42237401
63-5	Melting Point	All	42237401
63-7	Density	All	42237401
63-8	Solubility	All	42237401
63-9	Vapor Pressure	All	42237401
63-10	Dissociation Constant	All	42237401
63-11	Octanol/Water Partition	All	42237401
63-13	Stability	All	42237401
ECOLOGICAL EFFECTS			
71-1A	Acute Avian Oral - Quail/Duck	All	41513101
71-2A	Avian Dietary - Quail	All	41513102
71-2B	Avian Dietary - Duck	All	41513103
72-1A	Fish Toxicity Bluegill	All	42356102
72-1C	Fish Toxicity Rainbow Trout	All	42356103
72-2A	Invertebrate Toxicity	All	42356101

Data Supporting Guideline Requirements for the Reregistration of Chlorophacinone

REQUIREMENT		USE PATTERN	CITATION(S)
<u>TOXICOLOGY</u>			
81-1	Acute Oral Toxicity - Rat	All	41875301
81-2	Acute Dermal Toxicity - Rabbit/Rat	All	41702801
81-3	Acute Inhalation Toxicity - Rat	All	41981102
81-4	Primary Eye Irritation - Rabbit	All	41874001
81-5	Primary Dermal Irritation - Rabbit	All	41702801
81-6	Dermal Sensitization - Guinea Pig	All	41578601
82-1A	90-Day Feeding - Rodent	All	92018013
82-2	21-Day Dermal - Rabbit/Rat	All	42237402
83-3A	Developmental Toxicity - Rat	All	43349501
83-3B	Developmental Toxicity - Rabbit	All	43570801
85-1	General Metabolism	All	155540
86-1	Domestic Animal Safety	All	41981101
<u>ENVIRONMENTAL FATE</u>			
161-1	Hydrolysis	All	42205501
161-3	Photodegradation - Soil	All	42452301
162-1	Aerobic Soil Metabolism	All	43159801
163-1	Leaching/Adsorption/Desorption	All	42666001
<u>SPECIAL STUDIES</u>			
70-A-SS	Secondary Toxicity Study	All	42760902

Data Supporting Guideline Requirements for the Reregistration of Diphacinone and Salt

REQUIREMENT		USE PATTERN	CITATION(S)
<u>PRODUCT CHEMISTRY</u>			
61-1	Chemical Identity	All	41613401, 41727801, 41612801, 42136001, 42360601
61-2A	Start. Mat. & Mnfg. Process	All	41613401, 41612801, 42136001
61-2B	Formation of Impurities	All	41613401, 41612801, 42136001, 42136002, 42360601
62-1	Preliminary Analysis	All	41613402, 41727802, 41612802, 42136002
62-2	Certification of limits	All	41613402, 41612802, 42136002
62-3	Analytical Method	All	41613402, 41612802, 42136002
63-2	Color	All	41727803, 42360601
63-3	Physical State	All	42360601
63-4	Odor	All	134837
63-5	Melting Point	All	134837
63-7	Density	All	134837
63-8	Solubility	All	134837, 134839
63-9	Vapor Pressure	All	41612802, 134837
63-10	Dissociation Constant	All	41612802
63-11	Octanol/Water Partition	All	41612802, 134840
63-12	pH	All	41612802
63-13	Stability	All	41612802, 42136003
<u>ECOLOGICAL EFFECTS</u>			
71-1B	Acute Avian Oral - Quail/Duck TEP	All	42245201
71-2A	Avian Dietary - Quail	All	42408801
71-2B	Avian Dietary - Duck	All	42408802
72-1A	Fish Toxicity Bluegill	All	43249501
72-1C	Fish Toxicity Rainbow Trout	All	43249502
72-2A	Invertebrate Toxicity	All	42282201
<u>TOXICOLOGY</u>			

Data Supporting Guideline Requirements for the Reregistration of Diphacinone and Salt

REQUIREMENT		USE PATTERN	CITATION(S)
81-1	Acute Oral Toxicity - Rat	All	43260701, 43260702, 42245202, 60605
81-2	Acute Dermal Toxicity - Rabbit/Rat	All	42507001
81-3	Acute Inhalation Toxicity - Rat	All	43000401
81-4	Primary Eye Irritation - Rabbit	All	42245203
81-6	Dermal Sensitization - Guinea Pig	All	42132501
82-2	21-Day Dermal - Rabbit/Rat	All	074637, 77369
83-3A	Developmental Toxicity - Rat	All	077319, 42834801
84-2B	Structural Chromosomal Aberration	All	42406801
85-1	General Metabolism	All	92049009
86-1	Domestic Animal Safety	All	42791202
<u>ENVIRONMENTAL FATE</u>			
161-1	Hydrolysis	All	43582401
162-1	Aerobic Soil Metabolism	All	42035001
<u>SPECIAL STUDIES</u>			
70-13-SS	Secondary Toxicity Study	All	40077202

GUIDE TO APPENDIX C

1. CONTENTS OF BIBLIOGRAPHY. This bibliography contains citations of all studies considered relevant by EPA in arriving at the positions and conclusions stated elsewhere in the Reregistration Eligibility Document. Primary sources for studies in this bibliography have been the body of data submitted to EPA and its predecessor agencies in support of past regulatory decisions. Selections from other sources including the published literature, in those instances where they have been considered, are included.
2. UNITS OF ENTRY. The unit of entry in this bibliography is called a "study". In the case of published materials, this corresponds closely to an article. In the case of unpublished materials submitted to the Agency, the Agency has sought to identify documents at a level parallel to the published article from within the typically larger volumes in which they were submitted. The resulting "studies" generally have a distinct title (or at least a single subject), can stand alone for purposes of review and can be described with a conventional bibliographic citation. The Agency has also attempted to unite basic documents and commentaries upon them, treating them as a single study.
3. IDENTIFICATION OF ENTRIES. The entries in this bibliography are sorted numerically by Master Record Identifier, or "MRID number". This number is unique to the citation, and should be used whenever a specific reference is required. It is not related to the six-digit "Accession Number" which has been used to identify volumes of submitted studies (see paragraph 4(d)(4) below for further explanation). In a few cases, entries added to the bibliography late in the review may be preceded by a nine character temporary identifier. These entries are listed after all MRID entries. This temporary identifying number is also to be used whenever specific reference is needed.
4. FORM OF ENTRY. In addition to the Master Record Identifier (MRID), each entry consists of a citation containing standard elements followed, in the case of material submitted to EPA, by a description of the earliest known submission. Bibliographic conventions used reflect the standard of the American National Standards Institute (ANSI), expanded to provide for certain special needs.
 - a Author. Whenever the author could confidently be identified, the Agency has chosen to show a personal author. When no individual was identified, the Agency has shown an identifiable laboratory or testing facility as the author. When no author or laboratory could be identified, the Agency has shown the first submitter as the author.
 - b. Document date. The date of the study is taken directly from the document. When the date is followed by a question mark, the bibliographer has deduced the date from the evidence contained in the document. When the date appears

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as (19??), the Agency was unable to determine or estimate the date of the document.

- c. Title. In some cases, it has been necessary for the Agency bibliographers to create or enhance a document title. Any such editorial insertions are contained between square brackets.
- d. Trailing parentheses. For studies submitted to the Agency in the past, the trailing parentheses include (in addition to any self-explanatory text) the following elements describing the earliest known submission:
 - (1) Submission date. The date of the earliest known submission appears immediately following the word "received."
 - (2) Administrative number. The next element immediately following the word "under" is the registration number, experimental use permit number, petition number, or other administrative number associated with the earliest known submission.
 - (3) Submitter. The third element is the submitter. When authorship is defaulted to the submitter, this element is omitted.
 - (4) Volume Identification (Accession Numbers). The final element in the trailing parentheses identifies the EPA accession number of the volume in which the original submission of the study appears. The six-digit accession number follows the symbol "CDL," which stands for "Company Data Library." This accession number is in turn followed by an alphabetic suffix which shows the relative position of the study within the volume.

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- 00080235 Bratt, H.; Hudson, P. (1979) Brodifacoum: Absorption, Excretion and Tissue Retention in the Rat: Report No. CTL/P/462. (Unpublished study received Jul 22, 1981 under 10182-38; prepared by Imperial Chemical Industries, Ltd., England, submitted by ICI Americas, Inc., Wilmington, Del.; CDL:245704-E)
- 00088011 Hill, R.W.; Maddock, B.G.; Hart, B.; et al. (1976) Determination of the Acute Toxicity of PP581 to Bluegill Sunfish (*Lepomis macrochirus*): Report BL/B/1771. (Unpublished study received Jan 3, 1978 under 10182-EX-10; prepared by Imperial Chemical Industries, Ltd., submitted by ICI Americas, Inc., Wilmington, Del.; CDL:232750-F)
- 00124472 Hill, R. (1979) Determination of the Acute Toxicity of PP 581 to Rainbow Trout ...: BL/B/1877. (Unpublished study received Feb 27, 1979 under 10182-26; prepared by Imperial Chemical Industries, Ltd., Eng., submitted by ICI Americas, Inc., Wilmington, DE; CDL:237703-C)
- 00124476 Fink, R.; Beavers, J.; Grimes, J.; et al. (1978) Forty-day Dietary LC50--Mallard Duck: Technical Brodifacoum: Project No. 123-128. Final rept. (Unpublished study received Feb 27, 1979 under 10182-26; prepared by Wildlife International, Ltd. and Washington College, submitted by ICI Americas, Inc., Wilminton, DE; CDL:237703-H)
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- 00128442 Getty, C.; Wilkinson, W.; Sealey, C. (1978) Brodifacoum: Toxicity of the Liquid Concentrate Pelleted Bait and Technical Material to First Instar Daphnia magna: Report Series RJ0046B. (Unpublished study received Mar 29, 1974 under 10182-26; prepared by Imperial Chemical Industries Ltd., Eng., submitted by ICI Americas, Inc., Wilmington, DE; CDL:237909-A)

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40307201	Litchfield, M. (1980) Brodifacoum: Teratogenicity Study in the Rabbit: Individual Animal Data: Supplement: Lab Project ID: CTL/P/459S. Unpublished study prepared by ICI Central Toxicology Lab. 35 p.
40307202	Litchfield, M. (1980) Brodifacoum: Teratogenicity Study in the Rat: Individual Animal Data: Supplement: Lab Project ID: CTL/P/437S. Unpublished study prepared by ICI Central Toxicology Lab. 96 p.
41563303	Ross, D.; Roberts, N.; Fairley, C. (1990) Brodifacoum: The Acute Oral Toxicity (LD50) OF Brodifacoum to Mallard Duck: Lab Project Number: ICI 308 WL/791275. Unpublished study prepared by Hunting don Research Centre. 24 p.
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43582401	Riekena, C. (1995) Hydrolysis of Technical Diphacinone (2-(Diphenylacetyl)-1H-indene-1,3(2H)-dione): Lab Project Number: BEL/0894/C143. Unpublished study prepared by Bell Labs, Inc. 40 p.



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

GENERIC DATA CALL-IN NOTICE

CERTIFIED MAIL

Dear Sir or Madam:

This Notice requires you and other registrants of pesticide products containing the active ingredient(s) identified in Attachment 1 of this Notice, the Data Call-In Chemical Status Sheet, to submit certain data as noted herein to the U.S. Environmental Protection Agency (EPA, the Agency). These data are necessary to maintain the continued registration of your product(s) containing this active ingredient(s). Within 90 days after you receive this Notice you must respond as set forth in Section III below. Your response must state:

1. how you will comply with the requirements set forth in this Notice and its Attachments 1 through 4; or,
2. why you believe you are exempt from the requirements listed in this Notice and in Attachment 3, Requirements Status and Registrant's Response Form, (see section III-B); or,
3. why you believe EPA should not require your submission of data in the manner specified by this Notice (see section III-D).

If you do not respond to this Notice, or if you do not satisfy EPA that you will comply with its requirements or should be exempt or excused from doing so, then the registration of your product(s) subject to this Notice will be subject to suspension. We have provided a list of all of your products subject to this Notice in Attachment 2, Data Call-In Response Form, as well as a list of all registrants who were sent this Notice (Attachment 4).

The authority for this Notice is section 3(c)(2)(B) of the Federal Insecticide, Fungicide and Rodenticide Act as amended (FIFRA), 7 U.S.C. section 136a(c)(2)(B). Collection of this information is authorized under the Paperwork Reduction Act by OMB Approval No. 2070-0107 and 2070-0057 (expiration date 3-31-99).

This Notice is divided into six sections and five Attachments. The Notice itself contains information and instructions applicable to all Data Call-In Notices. The Attachments contain specific chemical information and instructions. The six sections of the Notice are:

- Section I - Why You Are Receiving This Notice
- Section II - Data Required By This Notice
- Section III - Compliance With Requirements Of This Notice
- Section IV - Consequences Of Failure To Comply With This Notice
- Section V - Registrants' Obligation To Report Possible Unreasonable Adverse Effects
- Section VI - Inquiries And Responses To This Notice

The Attachments to this Notice are:

- Attachment 1 - Data Call-In Chemical Status Sheet
- Attachment 2 - Data Call-In Response Form
- Attachment 3 - Requirements Status And Registrant's Response Form
- Attachment 4 - List Of All Registrants Sent This Data Call-In Notice

SECTION I. WHY YOU ARE RECEIVING THIS NOTICE

The Agency has reviewed existing data for this active ingredient(s) and reevaluated the data needed to support continued registration of the subject active ingredient(s). This reevaluation identified additional data necessary to assess the health and safety of the continued use of products containing this active ingredient(s). You have been sent this Notice because you have product(s) containing the subject active ingredient(s).

SECTION II. DATA REQUIRED BY THIS NOTICE

A. DATA REQUIRED

The data required by this Notice are specified in Attachment 3, Requirements Status and Registrant's Response Form. Depending on the results of the studies required in this Notice, additional testing may be required.

B. SCHEDULE FOR SUBMISSION OF DATA

You are required to submit the data or otherwise satisfy the data requirements specified in Attachment 3, Requirements Status and Registrant's Response Form, within the time frames provided.

C. TESTING PROTOCOL

All studies required under this Notice must be conducted in accordance with test standards outlined in the Pesticide Assessment Guidelines for those studies for which guidelines have been established.

These EPA Guidelines are available from the National Technical Information Service (NTIS), Attn: Order Desk, 5285 Port Royal Road, Springfield, Va 22161 (tel: 703-487-4650).

Protocols approved by the Organization for Economic Cooperation and Development (OECD) are also acceptable if the OECD-recommended test standards conform to those specified in the Pesticide Data Requirements regulation (40 CFR § 158.70). When using the OECD protocols, they should be modified as appropriate so that the data generated by the study will satisfy the requirements of 40 CFR § 158. Normally, the Agency will not extend deadlines for complying with data requirements when the studies were not conducted in accordance with acceptable standards. The OECD protocols are available from 2001 L Street, N.W., Washington, D.C. 20036 (Telephone number 202-785-6323; Fax telephone number 202-785-0350).

All new studies and proposed protocols submitted in response to this Data Call-In Notice must be in accordance with Good Laboratory Practices [40 CFR Part 160.3(a)(6)].

D. REGISTRANTS RECEIVING PREVIOUS SECTION 3(c)(2)(B) NOTICES ISSUED BY THE AGENCY

Unless otherwise noted herein, this Data Call-In does not in any way supersede or change the requirements of any previous Data Call-In(s), or any other agreements entered into with the Agency pertaining to such prior Notice. Registrants must comply with the requirements of all Notices to avoid issuance of a Notice of Intent to Suspend their affected products.

SECTION III. COMPLIANCE WITH REQUIREMENTS OF THIS NOTICE

A. SCHEDULE FOR RESPONDING TO THE AGENCY

The appropriate responses initially required by this Notice must be submitted to the Agency within 90 days after your receipt of this Notice. Failure to adequately respond to this Notice within 90 days of your receipt will be a basis for issuing a Notice of Intent to Suspend (NOIS) affecting your products. This and other bases for issuance of NOIS due to failure to comply with this Notice are presented in Section IV-A and IV-B.

B. OPTIONS FOR RESPONDING TO THE AGENCY

The options for responding to this Notice are: 1) voluntary cancellation, 2) delete use(s), (3) claim generic data exemption, (4) agree to satisfy the data requirements imposed by this Notice or (5) request a data waiver(s).

A discussion of how to respond if you chose the Voluntary Cancellation option, the Delete Use(s) option or the Generic Data Exemption option is presented below. A discussion of the various options available for satisfying the data requirements of this Notice is contained in Section III-C. A discussion of options relating to requests for data waivers is contained in Section III-D.

There are two forms that accompany this Notice of which, depending upon your response, one or both must be used in your response to the Agency. These forms are the Data-Call-In Response Form (Attachment 2) and the Requirements Status and Registrant's Response Form (Attachment 3). The Data Call-In Response Form must be submitted as part of every response to this Notice. Please note that the company's authorized representative is required to sign the first page of the Data Call-In Response Form and Requirements Status and Registrant's Response Form (if this form is required) and initial any subsequent pages. The forms contain separate detailed instructions on the response options. Do not alter the printed material. If you have questions or need assistance in preparing your response, call or write the contact person identified in Attachment 1.

1. Voluntary Cancellation - You may avoid the requirements of this Notice by requesting voluntary cancellation of your product(s) containing the active ingredient(s) that is the subject of this Notice. If you wish to voluntarily cancel your product, you must submit a completed Data Call-In Response Form, indicating your election of this option. Voluntary cancellation is item number 5 on the Data Call-In Response Form. If you choose this option, this is the only form that you are required to complete.

If you choose to voluntarily cancel your product, further sale and distribution of your product after the effective date of cancellation must be in accordance with the Existing Stocks provisions of this Notice which are contained in Section IV-C.

2. Use Deletion - You may avoid the requirements of this Notice by eliminating the uses of your product to which the requirements apply. If you wish to amend your registration to delete uses, you must submit the Requirements Status and Registrant's Response Form, a completed application for amendment, a copy of your proposed amended labeling, and all other information required for processing the application. Use deletion is option

number 7 on the Requirements Status and Registrant's Response Form. You must also complete a Data Call-In Response Form by signing the certification, item number 8. Application forms for amending registrations may be obtained from the Registration Support and Emergency Response Branch, Registration Division, (703) 308-8358.

If you choose to delete the use(s) subject to this Notice or uses subject to specific data requirements, further sale, distribution, or use of your product after one year from the due date of your 90 day response, must bear an amended label.

3. Generic Data Exemption - Under section 3(c)(2)(D) of FIFRA, an applicant for registration of a product is exempt from the requirement to submit or cite generic data concerning an active ingredient(s) if the active ingredient(s) in the product is derived exclusively from purchased, registered pesticide products containing the active ingredient(s). EPA has concluded, as an exercise of its discretion, that it normally will not suspend the registration of a product which would qualify and continue to qualify for the generic data exemption in section 3(c)(2)(D) of FIFRA. To qualify, all of the following requirements must be met:

- a. The active ingredient(s) in your registered product must be present solely because of incorporation of another registered product which contains the subject active ingredient(s) and is purchased from a source not connected with you; and,
- b. every registrant who is the ultimate source of the active ingredient(s) in your product subject to this DCI must be in compliance with the requirements of this Notice and must remain in compliance; and
- c. you must have provided to EPA an accurate and current "Confidential Statement of Formula" for each of your products to which this Notice applies.

To apply for the Generic Data Exemption you must submit a completed Data Call-In Response Form, Attachment 2 and all supporting documentation. The Generic Data Exemption is item number 6a on the Data Call-In Response Form. If you claim a generic data exemption you are not required to complete the Requirements Status and Registrant's Response Form. Generic Data Exemption cannot be selected as an option for product specific data.

If you are granted a Generic Data Exemption, you rely on the efforts of other persons to provide the Agency with the required data. If the registrant(s) who have committed to generate and submit the required data fail to take

appropriate steps to meet the requirements or are no longer in compliance with this Data Call-In Notice, the Agency will consider that both they and you are not in compliance and will normally initiate proceedings to suspend the registrations of both your and their product(s), unless you commit to submit and do submit the required data within the specified time. In such cases the Agency generally will not grant a time extension for submitting the data.

4. Satisfying the Data Requirements of this Notice - There are various options available to satisfy the data requirements of this Notice. These options are discussed in Section III-C of this Notice and comprise options 1 through 6 on the Requirements Status and Registrant's Response Form and option 6b and 7 on the Data Call-In Response Form. If you choose option 6b or 7, you must submit both forms as well as any other information/data pertaining to the option chosen to address the data requirement.

5. Request for Data Waivers. Data waivers are discussed in Section III-D of this Notice and are covered by options 8 and 9 on the Requirements Status and Registrant's Response Form. If you choose one of these options, you must submit both forms as well as any other information/data pertaining to the option chosen to address the data requirement.

C. SATISFYING THE DATA REQUIREMENTS OF THIS NOTICE

If you acknowledge on the Data Call-In Response Form that you agree to satisfy the data requirements (i.e. you select option 6b and/or 7), then you must select one of the six options on the Requirements Status and Registrant's Response Form related to data production for each data requirement. Your option selection should be entered under item number 9, "Registrant Response." The six options related to data production are the first six options discussed under item 9 in the instructions for completing the Requirements Status and Registrant's Response Form. These six options are listed immediately below with information in parentheses to guide registrants to additional instructions provided in this Section. The options are:

1. I will generate and submit data within the specified time frame (Developing Data),
2. I have entered into an agreement with one or more registrants to develop data jointly (Cost Sharing),
3. I have made offers to cost-share (Offers to Cost Share),
4. I am submitting an existing study that has not been submitted previously to the Agency by anyone (Submitting an Existing Study),
5. I am submitting or citing data to upgrade a study classified by EPA as partially acceptable and upgradeable (Upgrading a Study),

6. I am citing an existing study that EPA has classified as acceptable or an existing study that has been submitted but not reviewed by the Agency (Citing an Existing Study).

Option 1, Developing Data --

If you choose to develop the required data it must be in conformance with Agency deadlines and with other Agency requirements as referenced herein and in the attachments. All data generated and submitted must comply with the Good Laboratory Practice (GLP) rule (40 CFR Part 160), be conducted according to the Pesticide Assessment Guidelines (PAG), and be in conformance with the requirements of PR Notice 86-5. In addition, certain studies require Agency approval of test protocols in advance of study initiation. Those studies for which a protocol must be submitted have been identified in the Requirements Status and Registrant's Response Form and/or footnotes to the form. If you wish to use a protocol which differs from the options discussed in Section II-C of this Notice, you must submit a detailed description of the proposed protocol and your reason for wishing to use it. The Agency may choose to reject a protocol not specified in Section II-C. If the Agency rejects your protocol you will be notified in writing, however, you should be aware that rejection of a proposed protocol will not be a basis for extending the deadline for submission of data.

A progress report must be submitted for each study within 90 days from the date you are required to commit to generate or undertake some other means to address that study requirement, such as making an offer to cost-share or agreeing to share in the cost of developing that study. A 90-day progress report must be submitted for all studies. This 90-day progress report must include the date the study was or will be initiated and, for studies to be started within 12 months of commitment, the name and address of the laboratory(ies) or individuals who are or will be conducting the study.

In addition, if the time frame for submission of a final report is more than 1 year, interim reports must be submitted at 12 month intervals from the date you are required to commit to generate or otherwise address the requirement for the study. In addition to the other information specified in the preceding paragraph, at a minimum, a brief description of current activity on and the status of the study must be included as well as a full description of any problems encountered since the last progress report.

The time frames in the Requirements Status and Registrant's Response Form are the time frames that the Agency is allowing for the submission of completed study reports or protocols. The noted deadlines run from the date of the receipt of this Notice by the registrant. If the data are not submitted by the deadline, each registrant is subject to receipt of a Notice of Intent to Suspend the affected registration(s).

If you cannot submit the data/reports to the Agency in the time required by this Notice and intend to seek additional time to meet the requirement(s), you must submit a request to the Agency which includes: (1) a detailed description of the expected difficulty and (2) a proposed schedule including alternative dates for meeting such requirements on a step-by-step basis. You must explain any technical or laboratory difficulties and provide documentation from the laboratory performing the testing. While EPA is considering your request, the original deadline remains. The Agency will respond to your request in writing. If EPA does not grant your request, the original deadline remains. Normally, extensions can be requested only in cases of extraordinary testing problems beyond the expectation or control of the registrant. Extensions will not be given in submitting the 90-day responses. Extensions will not be considered if the request for extension is not made in a timely fashion; in no event shall an extension request be considered if it is submitted at or after the lapse of the subject deadline.

Option 2, Agreement to Share in Cost to Develop Data --

If you choose to enter into an agreement to share in the cost of producing the required data but will not be submitting the data yourself, you must provide the name of the registrant who will be submitting the data. You must also provide EPA with documentary evidence that an agreement has been formed. Such evidence may be your letter offering to join in an agreement and the other registrant's acceptance of your offer, or a written statement by the parties that an agreement exists. The agreement to produce the data need not specify all of the terms of the final arrangement between the parties or the mechanism to resolve the terms. Section 3(c)(2)(B) provides that if the parties cannot resolve the terms of the agreement they may resolve their differences through binding arbitration.

Option 3, Offer to Share in the Cost of Data Development --

If you have made an offer to pay in an attempt to enter into an agreement or amend an existing agreement to meet the requirements of this Notice and have been unsuccessful, you may request EPA (by selecting this option) to exercise its discretion not to suspend your registration(s), although you do not comply with the data submission requirements of this Notice. EPA has determined that as a general policy, absent other relevant considerations, it will not suspend the registration of a product of a registrant who has in good faith sought and continues to seek to enter into a joint data development/cost sharing program, but the other registrant(s) developing the data has refused to accept your offer. To qualify for this option, you must submit documentation to the Agency proving that you have made an offer to another registrant (who has an obligation to submit data) to share in the burden of developing that data.

You must also submit to the Agency a completed EPA Form 8570-32, Certification of Offer to Cost Share in the Development of Data. In addition, you must demonstrate that the other registrant to whom the offer was made has not accepted your offer to enter into a cost sharing agreement by including a copy of your offer and proof of the other registrant's receipt of that offer (such as a certified mail receipt). Your offer must, in addition to anything else, offer to share in the burden of producing the data upon terms to be agreed or failing agreement to be bound by binding arbitration as provided by FIFRA section 3(c)(2)(B)(iii) and must not qualify this offer. The other registrant must also inform EPA of its election of an option to develop and submit the data required by this Notice by submitting a Data Call-In Response Form and a Requirements Status and Registrant's Response Form committing to develop and submit the data required by this Notice.

In order for you to avoid suspension under this option, you may not withdraw your offer to share in the burdens of developing the data. In addition, the other registrant must fulfill its commitment to develop and submit the data as required by this Notice. If the other registrant fails to develop the data or for some other reason is subject to suspension, your registration as well as that of the other registrant will normally be subject to initiation of suspension proceedings, unless you commit to submit, and do submit the required data in the specified time frame. In such cases, the Agency generally will not grant a time extension for submitting the data.

Option 4, Submitting an Existing Study --

If you choose to submit an existing study in response to this Notice, you must determine that the study satisfies the requirements imposed by this Notice. You may only submit a study that has not been previously submitted to the Agency or previously cited by anyone. Existing studies are studies which predate issuance of this Notice. Do not use this option if you are submitting data to upgrade a study. (See Option 5).

You should be aware that if the Agency determines that the study is not acceptable, the Agency will require you to comply with this Notice, normally without an extension of the required date of submission. The Agency may determine at any time that a study is not valid and needs to be repeated.

To meet the requirements of the DCI Notice for submitting an existing study, all of the following three criteria must be clearly met:

- a. You must certify at the time that the existing study is submitted that the raw data and specimens from the study are available for audit and review and you must identify where they are available. This must

be done in accordance with the requirements of the Good Laboratory Practice (GLP) regulation, 40 CFR Part 160. As stated in 40 CFR 160.3(7) " *raw data* means any laboratory worksheets, records, memoranda, notes, or exact copies thereof, that are the result of original observations and activities of a study and are necessary for the reconstruction and evaluation of the report of that study. In the event that exact transcripts of raw data have been prepared (e.g., tapes which have been transcribed verbatim, dated, and verified accurate by signature), the exact copy or exact transcript may be substituted for the original source as raw data. *Raw data* may include photographs, microfilm or microfiche copies, computer printouts, magnetic media, including dictated observations, and recorded data from automated instruments." The term "specimens", according to 40 CFR 160.3(7), means "any material derived from a test system for examination or analysis."

b. Health and safety studies completed after May 1984 must also contain all GLP-required quality assurance and quality control information, pursuant to the requirements of 40 CFR Part 160. Registrants must also certify at the time of submitting the existing study that such GLP information is available for post-May 1984 studies by including an appropriate statement on or attached to the study signed by an authorized official or representative of the registrant.

c. You must certify that each study fulfills the acceptance criteria for the Guideline relevant to the study provided in the FIFRA Accelerated Reregistration Phase 3 Technical Guidance and that the study has been conducted according to the Pesticide Assessment Guidelines (PAG) or meets the purpose of the PAG (both available from NTIS). A study not conducted according to the PAG may be submitted to the Agency for consideration if the registrant believes that the study clearly meets the purpose of the PAG. The registrant is referred to 40 CFR 158.70 which states the Agency's policy regarding acceptable protocols. If you wish to submit the study, you must, in addition to certifying that the purposes of the PAG are met by the study, clearly articulate the rationale why you believe the study meets the purpose of the PAG, including copies of any supporting information or data. It has been the Agency's experience that studies completed prior to January 1970 rarely satisfied the purpose of the PAG and that necessary raw data are usually not available for such studies.

If you submit an existing study, you must certify that the study meets all requirements of the criteria outlined above.

If EPA has previously reviewed a protocol for a study you are submitting, you must identify any action taken by the Agency on the protocol and must indicate, as part of your certification, the manner in which all Agency comments, concerns, or issues were addressed in the final protocol and study.

If you know of a study pertaining to any requirement in this Notice which does not meet the criteria outlined above but does contain factual information regarding unreasonable adverse effects, you must notify the Agency of such a study. If such a study is in the Agency's files, you need only cite it along with the notification. If not in the Agency's files, you must submit a summary and copies as required by PR Notice 86-5.

Option 5, Upgrading a Study --

If a study has been classified as partially acceptable and upgradeable, you may submit data to upgrade that study. The Agency will review the data submitted and determine if the requirement is satisfied. If the Agency decides the requirement is not satisfied, you may still be required to submit new data normally without any time extension. Deficient, but upgradeable studies will normally be classified as supplemental. However, it is important to note that not all studies classified as supplemental are upgradeable. If you have questions regarding the classification of a study or whether a study may be upgraded, call or write the contact person listed in Attachment 1. If you submit data to upgrade an existing study you must satisfy or supply information to correct all deficiencies in the study identified by EPA. You must provide a clearly articulated rationale of how the deficiencies have been remedied or corrected and why the study should be rated as acceptable to EPA. Your submission must also specify the MRID number(s) of the study which you are attempting to upgrade and must be in conformance with PR Notice 86-5.

Do not submit additional data for the purpose of upgrading a study classified as unacceptable and determined by the Agency as not capable of being upgraded.

This option should also be used to cite data that has been previously submitted to upgrade a study, but has not yet been reviewed by the Agency. You must provide the MRID number of the data submission as well as the MRID number of the study being upgraded.

The criteria for submitting an existing study, as specified in Option 4 above, apply to all data submissions intended to upgrade studies. Additionally your submission of data intended to upgrade studies must be accompanied by a

certification that you comply with each of those criteria as well as a certification regarding protocol compliance with Agency requirements.

Option 6, Citing Existing Studies --

If you choose to cite a study that has been previously submitted to EPA, that study must have been previously classified by EPA as acceptable or it must be a study which has not yet been reviewed by the Agency. Acceptable toxicology studies generally will have been classified as "core-guideline" or "core minimum." For ecological effects studies, the classification generally would be a rating of "core." For all other disciplines the classification would be "acceptable." With respect to any studies for which you wish to select this option you must provide the MRID number of the study you are citing and, if the study has been reviewed by the Agency, you must provide the Agency's classification of the study.

If you are citing a study of which you are not the original data submitter, you must submit a completed copy of EPA Forms 8570-34 and 8570-35, Certification with Respect to Citation of Data, and Data Matrix.

D. REQUESTS FOR DATA WAIVERS

There are two types of data waiver responses to this Notice. The first is a request for a low volume/minor use waiver and the second is a waiver request based on your belief that the data requirement(s) are inapplicable and do not apply to your product.

1. Low Volume/Minor Use Waiver -- Option 8 on the Requirements Status and Registrant's Response Form. Section 3(c)(2)(A) of FIFRA requires EPA to consider the appropriateness of requiring data for low volume, minor use pesticides. In implementing this provision EPA considers as low volume pesticides only those active ingredient(s) whose total production volume for all pesticide registrants is small. In determining whether to grant a low volume, minor use waiver the Agency will consider the extent, pattern and volume of use, the economic incentive to conduct the testing, the importance of the pesticide, and the exposure and risk from use of the pesticide. If an active ingredient(s) is used for both high volume and low volume uses, a low volume exemption will not be approved. If all uses of an active ingredient(s) are low volume and the combined volumes for all uses are also low, then an exemption may be granted, depending on review of other information outlined below. An exemption will not be granted if any registrant of the active ingredient(s) elects to conduct the testing. Any registrant receiving a low volume minor use waiver must remain within the sales figures in their forecast supporting the waiver request in order to remain qualified for such waiver. If granted a waiver, a registrant will be required, as a condition of the waiver, to submit annual sales reports. The Agency will respond to requests for waivers in writing.

To apply for a low volume, minor use waiver, you must submit the following information, as applicable to your product(s), as part of your 90-day response to this Notice:

- a. Total company sales (pounds and dollars) of all registered product(s) containing the active ingredient(s). If applicable to the active ingredient(s), include foreign sales for those products that are not registered in this country but are applied to sugar (cane or beet), coffee, bananas, cocoa, and other such crops. Present the above information by year for each of the past five years.
- b. Provide an estimate of the sales (pounds and dollars) of the active ingredient(s) for each major use site. Present the above information by year for each of the past five years.
- c. Total direct production cost of product(s) containing the active ingredient(s) by year for the past five years. Include information on raw material cost, direct labor cost, advertising, sales and marketing, and any other significant costs listed separately.
- d. Total indirect production cost (e.g. plant overhead, amortized plant and equipment) charged to product(s) containing the active ingredient(s) by year for the past five years. Exclude all non-recurring costs that were directly related to the active ingredient(s), such as costs of initial registration and any data development.
- e. A list of each data requirement for which you seek a waiver. Indicate the type of waiver sought and the estimated cost to you (listed separately for each data requirement and associated test) of conducting the testing needed to fulfill each of these data requirements.
- f. A list of each data requirement for which you are not seeking any waiver and the estimated cost to you (listed separately for each data requirement and associated test) of conducting the testing needed to fulfill each of these data requirements.
- g. For each of the next ten years, a year-by-year forecast of company sales (pounds and dollars) of the active ingredient(s), direct production costs of product(s) containing the active ingredient(s) (following the parameters in item c above), indirect production costs of product(s) containing the active ingredient(s) (following the parameters in item d above), and costs of data development pertaining to the active ingredient(s).

h. A description of the importance and unique benefits of the active ingredient(s) to users. Discuss the use patterns and the effectiveness of the active ingredient(s) relative to registered alternative chemicals and non-chemical control strategies. Focus on benefits unique to the active ingredient(s), providing information that is as quantitative as possible. If you do not have quantitative data upon which to base your estimates, then present the reasoning used to derive your estimates. To assist the Agency in determining the degree of importance of the active ingredient(s) in terms of its benefits, you should provide information on any of the following factors, as applicable to your product(s):

(1) documentation of the usefulness of the active ingredient(s) in Integrated Pest Management, (b) description of the beneficial impacts on the environment of use of the active ingredient(s), as opposed to its registered alternatives, (c) information on the breakdown of the active ingredient(s) after use and on its persistence in the environment, and (d) description of its usefulness against a pest(s) of public health significance.

Failure to submit sufficient information for the Agency to make a determination regarding a request for a low volume minor use waiver will result in denial of the request for a waiver.

2. Request for Waiver of Data --Option 9 on the Requirements Status and Registrant's Response Form. This option may be used if you believe that a particular data requirement should not apply because the corresponding use is no longer registered or the requirement is inappropriate. You must submit a rationale explaining why you believe the data requirements should not apply. You must also submit the current label(s) of your product(s) and, if a current copy of your Confidential Statement of Formula is not already on file you must submit a current copy.

You will be informed of the Agency's decision in writing. If the Agency determines that the data requirements of this Notice do not apply to your product(s), you will not be required to supply the data pursuant to section 3(c)(2)(B). If EPA determines that the data are required for your product(s), you must choose a method of meeting the requirements of this Notice within the time frame provided by this Notice. Within 30 days of your receipt of the Agency's written decision, you must submit a revised Requirements Status and Registrant's Response Form indicating the option chosen.

IV. CONSEQUENCES OF FAILURE TO COMPLY WITH THIS NOTICE

A. NOTICE OF INTENT TO SUSPEND

The Agency may issue a Notice of Intent to Suspend products subject to this Notice due to failure by a registrant to comply with the requirements of this Data Call-In Notice, pursuant to FIFRA section 3(c)(2)(B). Events which may be the basis for issuance of a Notice of Intent to Suspend include, but are not limited to, the following:

1. Failure to respond as required by this Notice within 90 days of your receipt of this Notice.
2. Failure to submit on the required schedule an acceptable proposed or final protocol when such is required to be submitted to the Agency for review.
3. Failure to submit on the required schedule an adequate progress report on a study as required by this Notice.
4. Failure to submit on the required schedule acceptable data as required by this Notice.
5. Failure to take a required action or submit adequate information pertaining to any option chosen to address the data requirements (e.g., any required action or information pertaining to submission or citation of existing studies or offers, arrangements, or arbitration on the sharing of costs or the formation of Task Forces, failure to comply with the terms of an agreement or arbitration concerning joint data development or failure to comply with any terms of a data waiver).
6. Failure to submit supportable certifications as to the conditions of submitted studies, as required by Section III-C of this Notice.
7. Withdrawal of an offer to share in the cost of developing required data.
8. Failure of the registrant to whom you have tendered an offer to share in the cost of developing data and provided proof of the registrant's receipt of such offer, or failure of a registrant on whom you rely for a generic data exemption either to:
 - a. inform EPA of intent to develop and submit the data required by this Notice on a Data Call-In Response Form and a Requirements Status and Registrant's Response Form; or,
 - b. fulfill the commitment to develop and submit the data as required by this Notice; or,
 - c. otherwise take appropriate steps to meet the requirements stated in this Notice, unless you commit to submit and do submit the required data in the specified time frame.

9. Failure to take any required or appropriate steps, not mentioned above, at any time following the issuance of this Notice.

B. BASIS FOR DETERMINATION THAT SUBMITTED STUDY IS UNACCEPTABLE

The Agency may determine that a study (even if submitted within the required time) is unacceptable and constitutes a basis for issuance of a Notice of Intent to Suspend. The grounds for suspension include, but are not limited to, failure to meet any of the following:

1. EPA requirements specified in the Data Call-In Notice or other documents incorporated by reference (including, as applicable, EPA Pesticide Assessment Guidelines, Data Reporting Guidelines, and GeneTox Health Effects Test Guidelines) regarding the design, conduct, and reporting of required studies. Such requirements include, but are not limited to, those relating to test material, test procedures, selection of species, number of animals, sex and distribution of animals, dose and effect levels to be tested or attained, duration of test, and, as applicable, Good Laboratory Practices.
2. EPA requirements regarding the submission of protocols, including the incorporation of any changes required by the Agency following review.
3. EPA requirements regarding the reporting of data, including the manner of reporting, the completeness of results, and the adequacy of any required supporting (or raw) data, including, but not limited to, requirements referenced or included in this Notice or contained in PR 86-5. All studies must be submitted in the form of a final report; a preliminary report will not be considered to fulfill the submission requirement.

C. EXISTING STOCKS OF SUSPENDED OR CANCELLED PRODUCTS

EPA has statutory authority to permit continued sale, distribution and use of existing stocks of a pesticide product which has been suspended or cancelled if doing so would be consistent with the purposes of the Federal Insecticide, Fungicide, and Rodenticide Act.

The Agency has determined that such disposition by registrants of existing stocks for a suspended registration when a section 3(c)(2)(B) data request is outstanding would generally not be consistent with the Act's purposes. Accordingly, the Agency anticipates granting registrants permission to sell, distribute, or use existing stocks of suspended product(s) only in exceptional circumstances. If you believe such disposition of existing stocks of your product(s) which may be suspended for failure to comply with this Notice should be permitted, you have the burden of clearly

demonstrating to EPA that granting such permission would be consistent with the Act. You must also explain why an "existing stocks" provision is necessary, including a statement of the quantity of existing stocks and your estimate of the time required for their sale, distribution, and use. Unless you meet this burden the Agency will not consider any request pertaining to the continued sale, distribution, or use of your existing stocks after suspension.

If you request a voluntary cancellation of your product(s) as a response to this Notice and your product is in full compliance with all Agency requirements, you will have, under most circumstances, one year from the date your 90 day response to this Notice is due, to sell, distribute, or use existing stocks. Normally, the Agency will allow persons other than the registrant such as independent distributors, retailers and end users to sell, distribute or use such existing stocks until the stocks are exhausted. Any sale, distribution or use of stocks of voluntarily cancelled products containing an active ingredient(s) for which the Agency has particular risk concerns will be determined on case-by-case basis.

Requests for voluntary cancellation received after the 90 day response period required by this Notice will not result in the Agency granting any additional time to sell, distribute, or use existing stocks beyond a year from the date the 90 day response was due unless you demonstrate to the Agency that you are in full compliance with all Agency requirements, including the requirements of this Notice. For example, if you decide to voluntarily cancel your registration six months before a 3 year study is scheduled to be submitted, all progress reports and other information necessary to establish that you have been conducting the study in an acceptable and good faith manner must have been submitted to the Agency, before EPA will consider granting an existing stocks provision.

SECTION V. REGISTRANTS' OBLIGATION TO REPORT POSSIBLE UNREASONABLE ADVERSE EFFECTS

Registrants are reminded that FIFRA section 6(a)(2) states that if at any time after a pesticide is registered a registrant has additional factual information regarding unreasonable adverse effects on the environment by the pesticide, the registrant shall submit the information to the Agency. Registrants must notify the Agency of any factual information they have, from whatever source, including but not limited to interim or preliminary results of studies, regarding unreasonable adverse effects on man or the environment. This requirement continues as long as the products are registered by the Agency.

SECTION VI. INQUIRIES AND RESPONSES TO THIS NOTICE

If you have any questions regarding the requirements and procedures established by this Notice, call the contact person listed in Attachment 1, the Data Call-In Chemical Status Sheet.

All responses to this Notice (other than voluntary cancellation requests and generic data exemption claims) must include a completed Data Call-In Response Form (Attachment 2) and a completed Requirements Status and Registrant's Response Form (Attachment 3) and any other documents required by this Notice, and should be submitted to the contact person identified in Attachment 1. If the voluntary cancellation or generic data exemption option is chosen, only the Data Call-In Response Form need be submitted.

The Office of Compliance (OC) of the Office of Enforcement and Compliance Assurance (OECA), EPA, will be monitoring the data being generated in response to this Notice.

Sincerely yours,

Lois A. Rossi, Director
Special Review and
Reregistration Division

RODENTICIDE CLUSTER DATA CALL-IN CHEMICAL STATUS SHEET

INTRODUCTION

You have been sent this Generic Data Call-In Notice because you have product(s) containing one or more rodenticides.

This Generic Data Call-In Chemical Status Sheet, contains an overview of data required by this notice, and point of contact for inquiries pertaining to the reregistration of the rodenticides. This attachment is to be used in conjunction with (1) the Generic Data Call-In Notice, (2) the Generic Data Call-In Response Form (Attachment 2), (3) the Requirements Status and Registrant's Form (Attachment 2), (4) a list of registrants receiving this DCI (Attachment 4), (5) the EPA Acceptance Criteria (Attachment 5), and (6) the Cost Share and Data Compensation Forms in replying to this rodenticide Generic Data Call In (Attachment F). Instructions and guidance accompany each form.

DATA REQUIRED BY THIS NOTICE

The additional data requirements needed to complete the generic database for each of the rodenticide cluster active ingredients are contained in the Requirements Status and Registrant's Response, Attachment C. The Agency has concluded that additional product chemistry data on the rodenticides are needed. These data are needed to fully complete the reregistration of all eligible rodenticide cluster products.

INQUIRIES AND RESPONSES TO THIS NOTICE

If you have any questions regarding the generic data requirements and procedures established by this Notice, please contact Dennis Deziel at (703) 308-8180.

All responses to this Notice for the generic data requirements should be submitted to:

Dennis Deziel, Chemical Review Manager
Reregistration Branch I
Special Review and Registration Division (H7508W)
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, D.C. 20460
RE: **Rodenticide**

SPECIFIC INSTRUCTIONS FOR THE GENERIC DATA CALL-IN RESPONSE FORM

This Form is designed to be used to respond to call-ins for generic and product specific data for the purpose of reregistering pesticides under the Federal Insecticide Fungicide and Rodenticide Act. Fill out this form each time you are responding to a data call-in for which EPA has sent you the form entitled "Requirements Status and Registrant's Response."

Items 1-4 will have been preprinted on the form Items 5 through 7 must be completed by the registrant as appropriate Items 8 through 11 must be completed by the registrant before submitting a response to the Agency.

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggesting for reducing this burden, to Chief, Information Policy Branch, PM-223, U S Environmental Protection Agency, 401 M St, S W, Washington, D C 20460; and to the Office of Management and Budget, Paperwork Reduction Project 2070-0107, Washington, D C 20503.

INSTRUCTIONS

- Item 1. This item identifies your company name, number and address.
- Item 2. This item identifies the ease number, ease name, EPA chemical number and chemical name.
- Item 3. This item identifies the date and type of data call-in.
- Item 4. This item identifies the EPA product registrations relevant to the data call-in. Please note that you are also responsible for informing the Agency of your response regarding any product that you believe may be covered by this data call-in but that is not listed by the Agency in Item 4. You must bring any such apparent omission to the Agency's attention within the period required for submission of this response form.
- Item 5. Check this item for each product registration you wish to cancel voluntarily. If a registration number is listed for a product for which you previously requested voluntary cancellation, indicate in Item 5 the date of that request. You do not need to complete any item on the Requirements Status and Registrant's Response Form for any product that is voluntarily cancelled.
- Item 6a. Check this item if this data call-in is for generic data as indicated in Item 3 and if you are eligible for a Generic Data Exemption for the chemical listed in Item 2 and used in the subject product. By electing this

exemption, you agree to the terms and conditions of a Generic Data Exemption as explained in the Data Call-In Notice.

If you are eligible for or claim a Generic Data Exemption, enter the EPA registration Number of each registered source of that active ingredient that you use in your product.

Typically, if you purchase an EPA-registered product from one or more other producers (who, with respect to the incorporated product, are in compliance with this and any other outstanding Data Call-In Notice), and incorporate that product into all your products, you may complete this item for all products listed on this form. If, however, you produce the active ingredient yourself, or use any unregistered product (regardless of the fact that some of your sources are registered), you may not claim a Generic Data Exemption and you may not select this item.

- Item 6b. Check this Item if the data call-in is a generic data call-in as indicated in Item 3 and if you are agreeing to satisfy the generic data requirements of this data call-in. Attach the Requirements Status and Registrant's Response Form that indicates how you will satisfy those requirements.
- Item 7a. Check this item if this call-in is a data call-in as indicated in Item 3 for a manufacturing use product (MUP), and if your product is a manufacturing use product for which you agree to supply product-specific data. Attach the Requirements Status and Registrants' Response Form that indicates how you will satisfy those requirements.
- Item 7b. Check this item if this call-in is a data call-in for an end use product (EUP) as indicated in Item 3 and if your product is an end use product for which you agree to supply product-specific data. Attach the Requirements Status and Registrant's Response Form that indicates how you will satisfy those requirements.
- Item 8. This certification statement must be signed by an authorized representative of your company and the person signing must include his/her title. Additional pages used in your response must be initialed and dated in the space provided for the certification.
- Item 9. Enter the date of signature.
- Item 10. Enter the name of the person EPA should contact with questions regarding your response.
- Item 11. Enter the phone number of your company contact.

b. Diphacinone, and Salts

c. **Brodifacoum**

d. Bromadiolone

e. Bromethalin

SPECIFIC INSTRUCTIONS FOR COMPLETING THE REQUIREMENTS STATUS AND REGISTRANTS RESPONSE FORM

Generic Data

This form is designed to be used for registrants to respond to call-in- for generic and product-specific data as part of EPA's reregistration program under the Federal Insecticide Fungicide and Rodenticide Act. Although the form is the same for both product specific and generic data, instructions for completing the forms differ slightly. Specifically, options for satisfying product specific data requirements do not include (1) deletion of uses or (2) request for a low volume/minor use waiver. These instructions are for completion of generic data requirements.

EPA has developed this form individually for each data call-in addressed to each registrant, and has preprinted this form with a number of items. DO NOT use this form for any other active ingredient.

Items 1 through 8 (inclusive) will have been preprinted on the form. You must complete all other items on this form by typing or printing legibly.

Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggesting for reducing this burden, to Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, D.C. 20460; and to the Office of Management and Budget, Paperwork Reduction Project 2070-0107, Washington, D.C. 20503.

INSTRUCTIONS

- Item 1. This item identifies your company name, number, and address.
- Item 2. This item identifies the case number, case name, EPA chemical number and chemical name.
- Item 3. This item identifies the date and type of data call-in.
- Item 4. This item identifies the guideline reference numbers of studies required to support the product(s) being reregistered. These guidelines, in addition to requirements specified in the Data Call-In Notice, govern the conduct of the required studies.
- Item 5. This item identifies the study title associated with the guideline reference number and whether protocols and 1, 2, or 3-year progress reports are required to be

submitted in connection with the study. As noted in Section III of the Data Call-In Notice, 90-day progress reports are required for all studies.

If an asterisk appears in Item 5, EPA has attached information relevant to this guideline reference number to the Requirements Status and Registrant's Response Form.

Item 6. This item identifies the code associated with the use pattern of the pesticide. A brief description of each code follows:

- A. Terrestrial food
- B. Terrestrial feed
- C. Terrestrial non-food
- D. Aquatic food
- E. Aquatic non-food outdoor
- F. Aquatic non-food industrial
- G. Aquatic non-food residential
- H. Greenhouse food
- I. Greenhouse non-food crop
- J. Forestry
- K. Residential
- L. Indoor food
- M. Indoor non-food
- N. Indoor medical
- O. Indoor residential

Item 7. This item identifies the code assigned to the substance that must be used for testing. A brief description of each code follows.

- EP End-Use Product
- MP Manufacturing-Use Product
- MP/TGAI Manufacturing-Use Product and Technical Grade Active Ingredient
- PAI Pure Active Ingredient
- PAI/M Pure Active Ingredient and Metabolites
- PAI/PAIRA Pure Active Ingredient or Pure Active Ingredient Radiolabelled
- PAIRA Pure Active Ingredient Radiolabelled
- PAIRA/M Pure Active Ingredient Radiolabelled and Metabolites
- PAIRA/PM Pure Active Ingredient Radiolabelled and Plant Metabolites
- TEP Typical End-Use Product
- TEP _ * Typical End-Use Product, Percent Active Ingredient Specified
- TEP/MET Typical End-Use Product and Metabolites
- TEP/PAI/M Typical End-Use Product or Pure Active Ingredient and Metabolites

TGAI/PAIRA	Technical Grade Active Ingredient or Pure Active Ingredient Radiolabelled
TGAI	Technical Grade Active Ingredient
TGAI/TEP	Technical Grade Active Ingredient or Typical End-Use Product
TGAI/PAI	Technical Grade Active Ingredient or Pure Active Ingredient
MET	Metabolites
IMP	Impurities
DEGR	Degradates

*See: guideline comment

- Item 8. This item identifies the time frame allowed for submission of the study or protocol identified in item 2. The time frame runs from the date **of your** receipt of the Data Call-In Notice.
- Item 9. Enter the appropriate Response Code or Codes to show how you intend to comply with each data requirement. Brief descriptions of each code follow. The Data Call-In Notice contains a fuller description of each of these options.
1. (Developing Data) I will conduct a new study and submit it within the time frames specified in item 8 above. By indicating that I have chosen this option, I certify that I will comply with all the requirements pertaining to the conditions for submittal of this study as outlined in the Data Call-In Notice and that I will provide the protocol and progress reports required in item 5 above.
 2. (Agreement to Cost Share) I have entered into an agreement with one or more registrants to develop data jointly. By indicating that I have chosen this option, I certify that I will comply with all the requirements pertaining to sharing in the cost of developing data as outlined in the Data Call-In Notice.
 3. (Offer to Cost Share) I have made an offer to enter into an agreement with one or more registrants to develop data jointly. I am submitting a copy of the form "Certification of Offer to Cost Share in the Development of Data" that describes this offer/agreement. By indicating that I have chosen this option, I certify that I will comply with all the requirements pertaining to making an offer to share in the cost of developing data as outlined in the Data Call-In Notice.
 4. (Submitting Existing Data) I am submitting an existing study that has never before been submitted to EPA. By indicating that I have chosen this option, I certify that this study meets all the requirements pertaining to the conditions for submittal of existing data outlined in the Data Call-In Notice and I have attached the needed supporting information along with this response.

5. (Upgrading a Study) I am submitting or citing data to upgrade a study that EPA has classified as partially acceptable and potentially upgradeable. By indicating that I have chosen this option, I certify that I have met all the requirements pertaining to the conditions for submitting or citing existing data to upgrade a study described in the Data Call-In Notice. I am indicating on attached correspondence the Master Record Identification Number (MRID) that EPA has assigned to the data that I am citing as well as the MRID of the study I am attempting to upgrade.
6. (Citing a Study) I am citing an existing study that has been previously classified by EPA as acceptable, core, core minimum, or a study that has not yet been reviewed by the Agency. I am providing the Agency's classification of the study.
7. (Deleting Uses) I am attaching an application for amendment to my registration deleting the uses for which the data are required.
8. (Low Volume/Minor Use Waiver Request) I have read the statements concerning low volume-minor use data waivers in the Data Call-In Notice and I request a low-volume minor use waiver of the data requirement. I am attaching a detailed justification to support this waiver request including, among other things, all information required to support the request. I understand that, unless modified by the Agency in writing, the data requirement as stated in the Notice governs.
9. (Request for Waiver of Data) I have read the statements concerning data waivers other than low volume minor-use data waivers in the Data Call-In Notice and I request a waiver of the data requirement. I am attaching an identification of the basis for this waiver and a detailed justification to support this waiver request. The justification includes, among other things, all information required to support the request. I understand that, unless modified by the Agency in writing, the data requirement as stated in the Notice governs.

- Item 10. This item must be signed by an authorized representative of your company. The person signing must include his/her title, and must initial and date all other pages of this form.
- Item 11. Enter the date of signature.
- Item 12. Enter the name of the person EPA should contact with questions regarding your response.
- Item 13. Enter the phone number of your company contact.

Attachment 4. List of Registrant(s) sent this DCI (Insert)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

WASHINGTON, D.C. 20460

OFFICE OF
PREVENTION, PESTICIDES
AND TOXIC SUBSTANCES

DATA CALL-IN NOTICE

CERTIFIED MAIL

Dear Sir or Madam:

This Notice requires you and other registrants of pesticide products containing the active ingredient identified in Attachment 1 of this Notice, the Data Call-In Chemical Status Sheet, to submit certain product specific data as noted herein to the U.S. Environmental Protection Agency (EPA, the Agency). These data are necessary to maintain the continued registration of your product(s) containing this active ingredient. Within 90 days after you receive this Notice you must respond as set forth in Section III below. Your response must state:

1. How you will comply with the requirements set forth in this Notice and its Attachments A through G; or
2. Why you believe you are exempt from the requirements listed in this Notice and in Attachment 3, Requirements Status and Registrant's Response Form, (see section III-B); or
3. Why you believe EPA should not require your submission of product specific data in the manner specified by this Notice (see section III-D).

If you do not respond to this Notice, or if you do not satisfy EPA that you will comply with its requirements or should be exempt or excused from doing so, then the registration of your product(s) subject to this Notice will be subject to suspension. We have provided a list of all of your products subject to this Notice in Attachment 2, Data Call-In Response Form, as well as a list of all registrants who were sent this Notice (Attachment 6).

The authority for this Notice is section 3(c)(2)(B) of the Federal Insecticide, Fungicide and Rodenticide Act as amended (FIFRA), 7 U.S.C. section 136a(c)(2)(B). Collection of this information is authorized under the Paperwork Reduction Act by OMB Approval No. 2070-0107 (expiration date 12-31-99).

This Notice is divided into six sections and seven Attachments. The Notice itself contains information and instructions applicable to all Data Call-In Notices. The Attachments contain specific chemical information and instructions. The six sections of the Notice are:

- Section I - Why You Are Receiving This Notice
- Section II - Data Required By This Notice
- Section III - Compliance With Requirements Of This Notice
- Section IV - Consequences Of Failure To Comply With This Notice
- Section V - Registrants' Obligation To Report Possible Unreasonable Adverse Effects
- Section VI - Inquiries And Responses To This Notice

The Attachments to this Notice are:

- 1 - Data Call-In Chemical Status Sheet
- 2 - Product-Specific Data Call-In Response Form
- 3 - Requirements Status and Registrant's Response Form
- 4 - EPA Batching of End-Use Products for Meeting Acute Toxicology Data Requirements for Reregistration
- 5 - EPA Acceptance Criteria
- 6 - List of Registrants Receiving This Notice
- 7 - Cost Share and Data Compensation Forms, and Product Specific Data Report Form

SECTION I. WHY YOU ARE RECEIVING THIS NOTICE

The Agency has reviewed existing data for this active ingredient and reevaluated the data needed to support continued registration of the subject active ingredient. The Agency has concluded that the only additional data necessary are product specific data. No additional generic data requirements are being imposed. You have been sent this Notice because you have product(s) containing the subject active ingredient.

SECTION II. DATA REQUIRED BY THIS NOTICE

II-A. DATA REQUIRED

The product specific data required by this Notice are specified in Attachment 3, Requirements Status and Registrant's Response Form. Depending on the results of the studies required in this Notice, additional testing may be required.

II-B. SCHEDULE FOR SUBMISSION OF DATA

You are required to submit the data or otherwise satisfy the data requirements specified in Attachment 3, Requirements Status and Registrant's Response Form, within the time frames provided.

II-C. TESTING PROTOCOL

All studies required under this Notice must be conducted in accordance with test standards outlined in the Pesticide Assessment Guidelines for those studies for which guidelines have been established.

These EPA Guidelines are available from the National Technical Information Service (NTIS), Attn: Order Desk, 5285 Port Royal Road, Springfield, Va 22161 (tel: 703-487-4650).

Protocols approved by the Organization for Economic Cooperation and Development (OECD) are also acceptable if the OECD-recommended test standards conform to those specified in the Pesticide Data Requirements regulation (40 CFR § 158.70). When using the OECD protocols, they should be modified as appropriate so that the data generated by the study will satisfy the requirements of 40 CFR § 158. Normally, the Agency will not extend deadlines for complying with data requirements when the studies were not conducted in accordance with acceptable standards. The OECD protocols are available from OECD, 1750 Pennsylvania Avenue N.W., Washington, D.C. 20006.

All new studies and proposed protocols submitted in response to this Data Call-In Notice must be in accordance with Good Laboratory Practices [40 CFR Part 160.3(a)(6)].

II-D. REGISTRANTS RECEIVING PREVIOUS SECTION 3(c)(2)(B) NOTICES ISSUED BY THE AGENCY

Unless otherwise noted herein, this Data Call-In does not in any way supersede or change the requirements of any previous Data Call-In(s), or any other agreements entered into with the Agency pertaining to such prior Notice. Registrants must comply with the requirements of all Notices to avoid issuance of a Notice of Intent to Suspend their affected products.

SECTION III. COMPLIANCE WITH REQUIREMENTS OF THIS NOTICE

III-A. SCHEDULE FOR RESPONDING TO THE AGENCY

The appropriate responses initially required by this Notice for product specific data must be submitted to the Agency within 90 days after your receipt of this Notice. Failure to adequately respond to this Notice within 90 days of your receipt will be a basis for issuing a Notice of Intent to Suspend (NOIS) affecting your products. This and other bases for issuance of NOIS due to failure to comply with this Notice are presented in Section IV-A and IV-B.

III-B. OPTIONS FOR RESPONDING TO THE AGENCY

The options for responding to this Notice for product specific data are: (a) voluntary cancellation, (b) agree to satisfy the product specific data requirements imposed by this notice or (c) request a data waiver(s).

A discussion of how to respond if you chose the Voluntary Cancellation option is presented below. A discussion of the various options available for satisfying the product specific

data requirements of this Notice is contained in Section III-C. A discussion of options relating to requests for data waivers is contained in Section III-D.

There are two forms that accompany this Notice of which, depending upon your response, one or both must be used in your response to the Agency. These forms are the Data-Call-In Response Form, and the Requirements Status and Registrant's Response Form, Attachment 2 and Attachment 3. The Data Call-In Response Form must be submitted as part of every response to this Notice. In addition, one copy of the Requirements Status and Registrant's Response Form must be submitted for each product listed on the Data Call-In Response Form unless the voluntary cancellation option is selected or unless the product is identical to another (refer to the instructions for completing the Data Call-In Response Form in Attachment 2). Please note that the company's authorized representative is required to sign the first page of the Data Call-In Response Form and Requirements Status and Registrant's Response Form (if this form is required) and initial any subsequent pages. The forms contain separate detailed instructions on the response options. Do not alter the printed material. If you have questions or need assistance in preparing your response, call or write the contact person(s) identified in Attachment 1.

1. Voluntary Cancellation - You may avoid the requirements of this Notice by requesting voluntary cancellation of your product(s) containing the active ingredient that is the subject of this Notice. If you wish to voluntarily cancel your product, you must submit a completed Data Call-In Response Form, indicating your election of this option. Voluntary cancellation is item number 5 on the Data Call-In Response Form. If you choose this option, this is the only form that you are required to complete.

If you chose to voluntarily cancel your product, further sale and distribution of your product after the effective date of cancellation must be in accordance with the Existing Stocks provisions of this Notice which are contained in Section IV-C.

2. Satisfying the Product Specific Data Requirements of this Notice There are various options available to satisfy the product specific data requirements of this Notice. These options are discussed in Section III-C of this Notice and comprise options 1 through 6 on the Requirements Status and Registrant's Response Form and item numbers 7a and 7b on the Data Call-In Response Form. Deletion of a use(s) and the low volume/minor use option are not valid options for fulfilling product specific data requirements.

3. Request for Product Specific Data Waivers. Waivers for product specific data are discussed in Section III-D of this Notice and are covered by option 7 on the Requirements Status and Registrant's Response Form. If you choose one of these options, you must submit both forms as well as any other information/data pertaining to the option chosen to address the data requirement.

III-C SATISFYING THE DATA REQUIREMENTS OF THIS NOTICE

If you acknowledge on the Data Call-In Response Form that you agree to satisfy the product specific data requirements (i.e. you select item number 7a or 7b), then you must select one of the six options on the Requirements Status and Registrant's Response Form related to data production for each data requirement. Your option selection should be entered under item

number 9, "Registrant Response." The six options related to data production are the first six options discussed under item 9 in the instructions for completing the Requirements Status and Registrant's Response Form. These six options are listed immediately below with information in parentheses to guide registrants to additional instructions provided in this Section. The options are:

- (1) I will generate and submit data within the specified time frame (Developing Data)
- (2) I have entered into an agreement with one or more registrants to develop data jointly (Cost Sharing)
- (3) I have made offers to cost-share (Offers to Cost Share)
- (4) I am submitting an existing study that has not been submitted previously to the Agency by anyone (Submitting an Existing Study)
- (5) I am submitting or citing data to upgrade a study classified by EPA as partially acceptable and upgradeable (Upgrading a Study)
- (6) I am citing an existing study that EPA has classified as acceptable or an existing study that has been submitted but not reviewed by the Agency (Citing an Existing Study)

Option 1, Developing Data -- If you choose to develop the required data it must be in conformance with Agency deadlines and with other Agency requirements as referenced herein and in the attachments. All data generated and submitted must comply with the Good Laboratory Practice (GLP) rule (40 CFR Part 160), be conducted according to the Pesticide Assessment Guidelines (PAG), and be in conformance with the requirements of PR Notice 86-5.

The time frames in the Requirements Status and Registrant's Response Form are the time frames that the Agency is allowing for the submission of completed study reports. The noted deadlines run from the date of the receipt of this Notice by the registrant. If the data are not submitted by the deadline, each registrant is subject to receipt of a Notice of Intent to Suspend the affected registration(s).

If you cannot submit the data/reports to the Agency in the time required by this Notice and intend to seek additional time to meet the requirements(s), you must submit a request to the Agency which includes: (1) a detailed description of the expected difficulty and (2) a proposed schedule including alternative dates for meeting such requirements on a step-by-step basis. You must explain any technical or laboratory difficulties and provide documentation from the laboratory performing the testing. While EPA is considering your request, the original deadline remains. The Agency will respond to your request in writing. If EPA does not grant your request, the original deadline remains. Normally, extensions can be requested only in cases of extraordinary testing problems beyond the expectation or control of the registrant. Extensions will not be given in submitting the 90-day responses. Extensions will not be considered if the request for extension is not made in a timely fashion; in no event shall an extension request be considered if it is submitted at or after the lapse of the subject deadline.

Option 2, Agreement to Share in Cost to Develop Data -- Registrants may only choose this option for acute toxicity data and certain efficacy data and only if EPA has indicated in the attached data tables that your product and at least one other product are similar for purposes of depending on the same data. If this is the case, data may be generated for just one of the

products in the group. The registration number of the product for which data will be submitted must be noted in the agreement to cost share by the registrant selecting this option. If you choose to enter into an agreement to share in the cost of producing the required data but will not be submitting the data yourself, you must provide the name of the registrant who will be submitting the data. You must also provide EPA with documentary evidence that an agreement has been formed. Such evidence may be your letter offering to join in an agreement and the other registrant's acceptance of your offer, or a written statement by the parties that an agreement exists. The agreement to produce the data need not specify all of the terms of the final arrangement between the parties or the mechanism to resolve the terms. Section 3(c)(2)(B) provides that if the parties cannot resolve the terms of the agreement they may resolve their differences through binding arbitration.

Option 3, Offer to Share in the Cost of Data Development -- This option only applies to acute toxicity and certain efficacy data as described in option 2 above. If you have made an offer to pay in an attempt to enter into an agreement or amend an existing agreement to meet the requirements of this Notice and have been unsuccessful, you may request EPA (by selecting this option) to exercise its discretion not to suspend your registration(s), although you do not comply with the data submission requirements of this Notice. EPA has determined that as a general policy, absent other relevant considerations, it will not suspend the registration of a product of a registrant who has in good faith sought and continues to seek to enter into a joint data development/cost sharing program, but the other registrant(s) developing the data has refused to accept your offer. To qualify for this option, you must submit documentation to the Agency proving that you have made an offer to another registrant (who has an obligation to submit data) to share in the burden of developing that data. You must also submit to the Agency a completed EPA Form 8570-32, Certification of Offer to Cost Share in the Development of Data, Attachment 7. In addition, you must demonstrate that the other registrant to whom the offer was made has not accepted your offer to enter into a cost sharing agreement by including a copy of your offer and proof of the other registrant's receipt of that offer (such as a certified mail receipt). Your offer must, in addition to anything else, offer to share in the burden of producing the data upon terms to be agreed or failing agreement to be bound by binding arbitration as provided by FIFRA section 3(c)(2)(B)(iii) and must not qualify this offer. The other registrant must also inform EPA of its election of an option to develop and submit the data required by this Notice by submitting a Data Call-In Response Form and a Requirements Status and Registrant's Response Form committing to develop and submit the data required by this Notice.

In order for you to avoid suspension under this option, you may not withdraw your offer to share in the burdens of developing the data. In addition, the other registrant must fulfill its commitment to develop and submit the data as required by this Notice. If the other registrant fails to develop the data or for some other reason is subject to suspension, your registration as well as that of the other registrant will normally be subject to initiation of suspension proceedings, unless you commit to submit, and do submit the required data in the specified time frame. In such cases, the Agency generally will not grant a time extension for submitting the data.

Option 4, Submitting an Existing Study -- If you choose to submit an existing study in response to this Notice, you must determine that the study satisfies the requirements imposed by this Notice. You may only submit a study that has not been previously submitted to the Agency

or previously cited by anyone. Existing studies are studies which predate issuance of this Notice. Do not use this option if you are submitting data to upgrade a study. (See Option 5).

You should be aware that if the Agency determines that the study is not acceptable, the Agency will require you to comply with this Notice, normally without an extension of the required date of submission. The Agency may determine at any time that a study is not valid and needs to be repeated.

To meet the requirements of the DCI Notice for submitting an existing study, all of the following three criteria must be clearly met:

- a. You must certify at the time that the existing study is submitted that the raw data and specimens from the study are available for audit and review and you must identify where they are available. This must be done in accordance with the requirements of the Good Laboratory Practice (GLP) regulation, 40 CFR Part 160. As stated in 40 CFR 160.3(j) " 'raw data' means any laboratory worksheets, records, memoranda, notes, or exact copies thereof, that are the result of original observations and activities of a study and are necessary for the reconstruction and evaluation of the report of that study. In the event that exact transcripts of raw data have been prepared (e.g., tapes which have been transcribed verbatim, dated, and verified accurate by signature), the exact copy or exact transcript may be substituted for the original source as raw data. 'Raw data' may include photographs, microfilm or microfiche copies, computer printouts, magnetic media, including dictated observations, and recorded data from automated instruments." The term "specimens", according to 40 CFR 160.3(k), means "any material derived from a test system for examination or analysis."
- b. Health and safety studies completed after May 1984 must also contain all GLP-required quality assurance and quality control information, pursuant to the requirements of 40 CFR Part 160. Registrants must also certify at the time of submitting the existing study that such GLP information is available for post-May 1984 studies by including an appropriate statement on or attached to the study signed by an authorized official or representative of the registrant.
- c. You must certify that each study fulfills the acceptance criteria for the Guideline relevant to the study provided in the FIFRA Accelerated Reregistration Phase 3 Technical Guidance and that the study has been conducted according to the Pesticide Assessment Guidelines (PAG) or meets the purpose of the PAG (both available from NTIS). A study not conducted according to the PAG may be submitted to the Agency for consideration if the registrant believes that the study clearly meets the purpose of the PAG. The registrant is referred to 40 CFR 158.70 which states the Agency's policy regarding acceptable protocols. If you wish to submit the study, you must, in addition to certifying that the purposes of the PAG are met by the study, clearly articulate the rationale why you believe the study meets the purpose of the PAG, including copies of any supporting information or data. It has been the Agency's experience that studies completed

prior to January 1970 rarely satisfied the purpose of the PAG and that necessary raw data are usually not available for such studies.

If you submit an existing study, you must certify that the study meets all requirements of the criteria outlined above.

If you know of a study pertaining to any requirement in this Notice which does not meet the criteria outlined above but does contain factual information regarding unreasonable adverse effects, you must notify the Agency of such a study. If such study is in the Agency's files, you need only cite it along with the notification. If not in the Agency's files, you must submit a summary and copies as required by PR Notice 86-5.

Option 5, Upgrading a Study -- If a study has been classified as partially acceptable and upgradeable, you may submit data to upgrade that study. The Agency will review the data submitted and determine if the requirement is satisfied. If the Agency decides the requirement is not satisfied, you may still be required to submit new data normally without any time extension. Deficient, but upgradeable studies will normally be classified as supplemental. However, it is important to note that not all studies classified as supplemental are upgradeable. If you have questions regarding the classification of a study or whether a study may be upgraded, call or write the contact person listed in Attachment 1. If you submit data to upgrade an existing study you must satisfy or supply information to correct all deficiencies in the study identified by EPA. You must provide a clearly articulated rationale of how the deficiencies have been remedied or corrected and why the study should be rated as acceptable to EPA. Your submission must also specify the MRID number(s) of the study which you are attempting to upgrade and must be in conformance with PR Notice 86-5.

Do not submit additional data for the purpose of upgrading a study classified as unacceptable and determined by the Agency as not capable of being upgraded.

This option should also be used to cite data that has been previously submitted to upgrade a study, but has not yet been reviewed by the Agency. You must provide the MRID number of the data submission as well as the MRID number of the study being upgraded.

The criteria for submitting an existing study, as specified in Option 4 above, apply to all data submissions intended to upgrade studies. Additionally your submission of data intended to upgrade studies must be accompanied by a certification that you comply with each of those criteria as well as a certification regarding protocol compliance with Agency requirements.

Option 6, Citing Existing Studies -- If you choose to cite a study that has been previously submitted to EPA, that study must have been previously classified by EPA as acceptable or it must be a study which has not yet been reviewed by the Agency. Acceptable toxicology studies generally will have been classified as "core-guideline" or "core minimum." For all other disciplines the classification would be "acceptable." With respect to any studies for which you wish to select this option you must provide the MRID number of the study you are citing and, if the study has been reviewed by the Agency, you must provide the Agency's classification of the study.

If you are citing a study of which you are not the original data submitter, you must submit a completed copy of EPA Forms 8570-34 and 8570-35, Certification with Respect to Citation of Data, and Data Matrix.

Registrants who select one of the above 6 options must meet all of the requirements described in the instructions for completing the Data Call-In Response Form and the Requirements Status and Registrant's Response Form, as appropriate.

III-D REQUESTS FOR DATA WAIVERS

If you request a waiver for product specific data because you believe it is inappropriate, you must attach a complete justification for the request, including technical reasons, data and references to relevant EPA regulations, guidelines or policies. (Note: any supplemental data must be submitted in the format required by PR Notice 86-5). This will be the only opportunity to state the reasons or provide information in support of your request. If the Agency approves your waiver request, you will not be required to supply the data pursuant to section 3(c)(2)(B) of FIFRA. If the Agency denies your waiver request, you must choose an option for meeting the data requirements of this Notice within 30 days of the receipt of the Agency's decision. You must indicate and submit the option chosen on the Requirements Status and Registrant's Response Form. Product specific data requirements for product chemistry, acute toxicity and efficacy (where appropriate) are required for all products and the Agency would grant a waiver only under extraordinary circumstances. You should also be aware that submitting a waiver request will not automatically extend the due date for the study in question. Waiver requests submitted without adequate supporting rationale will be denied and the original due date will remain in force.

IV. CONSEQUENCES OF FAILURE TO COMPLY WITH THIS NOTICE

IV-A NOTICE OF INTENT TO SUSPEND

The Agency may issue a Notice of Intent to Suspend products subject to this Notice due to failure by a registrant to comply with the requirements of this Data Call-In Notice, pursuant to FIFRA section 3(c)(2)(B). Events which may be the basis for issuance of a Notice of Intent to Suspend include, but are not limited to, the following:

1. Failure to respond as required by this Notice within 90 days of your receipt of this Notice.
2. Failure to submit on the required schedule an acceptable proposed or final protocol when such is required to be submitted to the Agency for review.
3. Failure to submit on the required schedule an adequate progress report on a study as required by this Notice.
4. Failure to submit on the required schedule acceptable data as required by this Notice.

5. Failure to take a required action or submit adequate information pertaining to any option chosen to address the data requirements (e.g., any required action or information pertaining to submission or citation of existing studies or offers, arrangements, or arbitration on the sharing of costs or the formation of Task Forces, failure to comply with the terms of an agreement or arbitration concerning joint data development or failure to comply with any terms of a data waiver).
6. Failure to submit supportable certifications as to the conditions of submitted studies, as required by Section III-C of this Notice.
7. Withdrawal of an offer to share in the cost of developing required data.
8. Failure of the registrant to whom you have tendered an offer to share in the cost of developing data and provided proof of the registrant's receipt of such offer or failure of a registrant on whom you rely for a generic data exemption either to:
 - a. inform EPA of intent to develop and submit the data required by this Notice on a Data Call-In Response Form and a Requirements Status and Registrant's Response Form;
 - b. fulfill the commitment to develop and submit the data as required by this Notice; or
 - c. otherwise take appropriate steps to meet the requirements stated in this Notice, unless you commit to submit and do submit the required data in the specified time frame.
9. Failure to take any required or appropriate steps, not mentioned above, at any time following the issuance of this Notice.

IV-B. BASIS FOR DETERMINATION THAT SUBMITTED STUDY IS UNACCEPTABLE

The Agency may determine that a study (even if submitted within the required time) is unacceptable and constitutes a basis for issuance of a Notice of Intent to Suspend. The grounds for suspension include, but are not limited to, failure to meet any of the following:

1. EPA requirements specified in the Data Call-In Notice or other documents incorporated by reference (including, as applicable, EPA Pesticide Assessment Guidelines, Data Reporting Guidelines, and GeneTox Health Effects Test Guidelines) regarding the design, conduct, and reporting of required studies. Such requirements include, but are not limited to, those relating to test material, test procedures, selection of species, number of animals, sex and distribution of animals, dose and effect levels to be tested or attained, duration of test, and, as applicable, Good Laboratory Practices.
2. EPA requirements regarding the submission of protocols, including the incorporation of any changes required by the Agency following review.

3. EPA requirements regarding the reporting of data, including the manner of reporting, the completeness of results, and the adequacy of any required supporting (or raw) data, including, but not limited to, requirements referenced or included in this Notice or contained in PR 86-5. All studies must be submitted in the form of a final report; a preliminary report will not be considered to fulfill the submission requirement.

IV-C EXISTING STOCKS OF SUSPENDED OR CANCELLED PRODUCTS

EPA has statutory authority to permit continued sale, distribution and use of existing stocks of a pesticide product which has been suspended or cancelled if doing so would be consistent with the purposes of the Act.

The Agency has determined that such disposition by registrants of existing stocks for a suspended registration when a section 3(c)(2)(B) data request is outstanding would generally not be consistent with the Act's purposes. Accordingly, the Agency anticipates granting registrants permission to sell, distribute, or use existing stocks of suspended product(s) only in exceptional circumstances. If you believe such disposition of existing stocks of your product(s) which may be suspended for failure to comply with this Notice should be permitted, you have the burden of clearly demonstrating to EPA that granting such permission would be consistent with the Act. You must also explain why an "existing stocks" provision is necessary, including a statement of the quantity of existing stocks and your estimate of the time required for their sale, distribution, and use. Unless you meet this burden the Agency will not consider any request pertaining to the continued sale, distribution, or use of your existing stocks after suspension.

If you request a voluntary cancellation of your product(s) as a response to this Notice and your product is in full compliance with all Agency requirements, you will have, under most circumstances, one year from the date your 90 day response to this Notice is due, to sell, distribute, or use existing stocks. Normally, the Agency will allow persons other than the registrant such as independent distributors, retailers and end users to sell, distribute or use such existing stocks until the stocks are exhausted. Any sale, distribution or use of stocks of voluntarily cancelled products containing an active ingredient for which the Agency has particular risk concerns will be determined on case-by-case basis.

Requests for voluntary cancellation received after the 90 day response period required by this Notice will not result in the Agency granting any additional time to sell, distribute, or use existing stocks beyond a year from the date the 90 day response was due unless you demonstrate to the Agency that you are in full compliance with all Agency requirements, including the requirements of this Notice. For example, if you decide to voluntarily cancel your registration six months before a 3 year study is scheduled to be submitted, all progress reports and other information necessary to establish that you have been conducting the study in an acceptable and good faith manner must have been submitted to the Agency, before EPA will consider granting an existing stocks provision.

SECTION V. REGISTRANTS' OBLIGATION TO REPORT POSSIBLE UNREASONABLE ADVERSE EFFECTS

Registrants are reminded that FIFRA section 6(a)(2) states that if at any time after a pesticide is registered a registrant has additional factual information regarding unreasonable adverse effects on the environment by the pesticide, the registrant shall submit the information to the Agency. Registrants must notify the Agency of any factual information they have, from whatever source, including but not limited to interim or preliminary results of studies, regarding unreasonable adverse effects on man or the environment. This requirement continues as long as the products are registered by the Agency.

SECTION VI. INQUIRIES AND RESPONSES TO THIS NOTICE

If you have any questions regarding the requirements and procedures established by this Notice, call the contact person(s) listed in Attachment 1, the Data Call-In Chemical Status Sheet.

All responses to this Notice (other than voluntary cancellation requests and generic data exemption claims) must include a completed Data Call-In Response Form and a completed Requirements Status and Registrant's Response Form (Attachment 2 and Attachment 3 for product specific data) and any other documents required by this Notice, and should be submitted to the contact person(s) identified in Attachment 1. If the voluntary cancellation or generic data exemption option is chosen, only the Data Call-In Response Form need be submitted.

The Office of Compliance Monitoring (OCM) of the Office of Pesticides and Toxic Substances (OPTS), EPA, will be monitoring the data being generated in response to this Notice.

Sincerely yours,

Lois A. Rossi, Director
Special Review and
Reregistration Division

Attachments

- 1 - Data Call-In Chemical Status Sheet
- 2 - Product-Specific Data Call-In Response Form
- 3 - Requirements Status and Registrant's Response Form
- 4 - EPA Batching of End-Use Products for Meeting Acute Toxicology Data Requirements for Reregistration
- 5 - EPA Acceptance Criteria
- 6 - List of Registrants Receiving This Notice
- 7 - Cost Share and Data Compensation Forms, and Product Specific Data Report Form

2665 DATA CALL-IN CHEMICAL STATUS SHEET

INTRODUCTION

You have been sent one of the following Product Specific Data Call-In Notices because you have product(s) containing a rodenticide.

This Product Specific Data Call-In Chemical Status Sheet, contains an overview of data required by this notice, and point of contact for inquiries pertaining to the reregistration of the rodenticides. This attachment is to be used in conjunction with (1) the Product Specific Data Call-In Notice, (2) the Product Specific Data Call-In Response Form (Attachment 2), (3) the Requirements Status and Registrant's Form (Attachment 3), (4) EPA's Grouping of End-Use Products for Meeting Acute Toxicology Data Requirement (Attachment 4), (5) the EPA Acceptance Criteria (Attachment 5), (6) a list of registrants receiving this DCI (Attachment 6) and (7) the Cost Share and Data Compensation Forms in replying to your rodenticide Product Specific Data Call-In (Attachment 7). Instructions and guidance accompany each form.

DATA REQUIRED BY THIS NOTICE

The additional data requirements needed to complete the database for the rodenticides are contained in the Requirements Status and Registrant's Response, Attachment 3. The Agency has concluded that additional data on the rodenticides are needed for specific products. These data are required to be submitted to the Agency within the time frame listed. These data are needed to fully complete the reregistration of all eligible rodenticide products.

INQUIRIES AND RESPONSES TO THIS NOTICE

If you have any questions regarding this product specific data requirements and procedures established by this Notice, please contact Frank Rubis at (703) 308-8184.

All responses to this Notice for the Product Specific data requirements should be submitted to:

Frank Rubis
Chemical Review Manager Team 81
Product Reregistration Branch
Special Review and Reregistration Branch 7508W
Office of Pesticide Programs
U.S. Environmental Protection Agency
Washington, D.C. 20460

RE: **Rodenticides**

INSTRUCTIONS FOR COMPLETING THE **DATA CALL-IN RESPONSE FORM FOR PRODUCT SPECIFIC DATA**

- Item 1-4. Already completed by EPA.
- Item 5. If you wish to **voluntarily cancel** your product, answer "**yes.**" If you choose this option, you will not have to provide the data required by the Data Call-In Notice and you will not have to complete any other forms. Further sale and distribution of your product after the effective date of cancellation must be in accordance with the Existing Stocks provision of the Data Call-In Notice (Section IV-C).
- Item 6. Not applicable since this form calls in product specific data only. However, if your product is **identical** to another product and you qualify for a **data exemption**, you must respond with "**yes**" to Item 7a (MUP) or 7B (EUP) on this form, provide the **EPA registration numbers of your source(s)**; you would **not** complete the "Requirements Status and Registrant's Response" form. Examples of such products include **repackaged** products and **Special Local Needs (Section 24c)** products which are identical to federally registered products.
- Item 7a. For each **manufacturing use product** (MUP) for which you wish to maintain registration, you must agree to satisfy the data requirements by responding "**yes.**"
- Item 7b. For each **end use product** (EUP) for which you wish to maintain registration, you must agree to satisfy the data requirements by responding "**yes.**" If you are requesting a **data waiver**, answer "**yes**" here; in addition, on the "Requirements Status and Registrant's Response" form under Item 9, you must respond with **Option 7** (Waiver Request) for each study for which you are requesting a waiver. See Item 6 with regard to identical products and data exemptions.
- Items 8-11. Self-explanatory.
- NOTE:** You may provide **additional information** that does not fit on this form in a signed letter that accompanies this form. For example, you may wish to report that your product has already been transferred to another company or that you have already voluntarily canceled this product. For these cases, please supply all relevant details so that EPA can ensure that its records are correct.

INSTRUCTIONS FOR COMPLETING THE REQUIREMENTS STATUS AND REGISTRANT'S RESPONSE FORM FOR PRODUCT SPECIFIC DATA

- Item 1-3 Completed by EPA. Note the **unique identifier number** assigned by EPA in Item 3. This number **must be used in the transmittal document for any data submissions** in response to this Data Call-In Notice.
- Item 4. The guideline reference numbers of studies required to support the product's continued registration are identified. These guidelines, in addition to the requirements specified in the Notice, govern the conduct of the required studies. Note that series 61 and 62 in product chemistry are now listed under 40 CFR 158.155 through 158.180, Subpart C.
- Item 5. The study title associated with the guideline reference number is identified.
- Item 6. The use pattern(s) of the pesticide associated with the product specific requirements is (are) identified. For most product specific data requirements, all use patterns are covered by the data requirements. In the case of efficacy data, the required studies only pertain to products which have the use sites and/or pests indicated.
- Item 7. The substance to be tested is identified by EPA. For product specific data, the product as formulated for sale and distribution is the test substance, except in rare cases.
- Item 8. The due date for submission of each study is identified. It is normally based on **8 months after issuance of the Reregistration Eligibility Document** unless EPA determines that a longer time period is necessary.
- Item 9. **Enter only one of the following response codes for each data requirement to show how you intend to comply with the data requirements listed in this table.** Fuller descriptions of each option are contained in the Data Call-In Notice.
1. I will generate and submit data by the specified due date (**Developing Data**). By indicating that I have chosen this option, I certify that I will comply with all the requirements pertaining to the conditions for submittal of this study as outlined in the Data Call-In Notice. By the specified due date, I will also submit: (1) a completed "**Certification With Respect To Data Compensation Requirements**" form (EPA Form 8570-29) and (2) two completed and signed copies of the **Confidential Statement of Formula (EPA Form 8570-4)**.
 2. I have entered into an agreement with one or more registrants to develop data jointly (**Cost Sharing**). I am submitting a **copy of this agreement**. I understand that this option is available **only** for acute toxicity or certain efficacy data and **only** if EPA indicates in an attachment to this Notice that my product is similar enough to another

product to qualify for this option. I certify that another party in the agreement is committing to submit or provide the required data; if the required study is not submitted on time, my product may be subject to suspension. By the specified due date, I will also submit: (1) a completed "**Certification With Respect To Data Compensation Requirements**" form (EPA Form 8570-29) and (2) two completed and signed copies of the **Confidential Statement of Formula** (EPA Form 8570-4).

3. I have made offers to share in the cost to develop data (**Offers to Cost Share**). I understand that this option is available **only** for acute toxicity or certain efficacy data and **only** if EPA indicates in an attachment to this Data Call-In Notice that my product is similar enough to another product to qualify for this option. I am submitting **evidence that I have made an offer** to another registrant (who has an obligation to submit data) to share in the cost of that data. I am also submitting a completed "**Certification of Offer to Cost Share in the Development Data**" form. I am including a copy of my offer and proof of the other registrant's receipt of that offer. I am identifying the party which is committing to submit or provide the required data; if the required study is not submitted on time, my product may be subject to suspension. I understand that other terms under Option 3 in the Data Call-In Notice (Section III-C.1.) apply as well. By the specified due date, I will also submit: (1) a completed "**Certification With Respect To Data Compensation Requirements**" form (EPA Form 8570-29) and (2) two completed and signed copies of the **Confidential Statement of Formula** (EPA Form 8570-4).
4. By the specified due date, I will submit an existing study that has not been submitted previously to the Agency by anyone (**Submitting an Existing Study**). I certify that this study will meet all the requirements for submittal of existing data outlined in Option 4 in the Data Call-In Notice (Section III-C.1.) and will meet the attached acceptance criteria (for acute toxicity and product chemistry data). I will attach the needed supporting information along with this response. I also certify that I have determined that this study will fill the data requirement for which I have indicated this choice. By the specified due date, I will also submit a completed "**Certification With Respect To Data Compensation Requirements**" form (EPA Form 8570-29) to show what data compensation option I have chosen. By the specified due date, I will also submit: (1) a completed "**Certification With Respect To Data Compensation Requirements**" form (EPA Form 8570-29) and (2) two completed and signed copies of the **Confidential Statement of Formula** (EPA Form 8570-4).
5. By the specified due date, I will submit or cite data to upgrade a study classified by the Agency as partially acceptable and upgradable (**Upgrading a Study**). I will submit **evidence of the Agency's review** indicating that the study may be upgraded and what information is required to do so. I will provide the MRID or Accession number of the study at the due date. I understand that the conditions for this option outlined Option 5 in the Data Call-In Notice (Section III-C.1.) apply. By the specified due date, I will also submit: (1) a completed "**Certification With Respect**

To Data Compensation Requirements" form (EPA Form 8570-29) and (2) two completed and signed copies of the Confidential Statement of Formula (EPA Form 8570-4).

6. By the specified due date, I will cite an existing study that the Agency has classified as acceptable or an existing study that has been submitted but not reviewed by the Agency (**Citing an Existing Study**). If I am citing another registrant's study, I understand that this option is available **only** for acute toxicity or certain efficacy data and **only** if the cited study was conducted on my product, an identical product or a product which EPA has "grouped" with one or more other products for purposes of depending on the same data. I may also choose this option if I am citing my own data. In either case, I will provide the **MRID or Accession number(s)** for the cited data on a "Product Specific Data Report" form or in a similar format. By the specified due date, I will also submit: (1) a completed "**Certification With Respect To Data Compensation Requirements" form (EPA Form 8570-29)** and (2) two completed and signed copies of the **Confidential Statement of Formula (EPA Form 8570-4)**.
7. I request a waiver for this study because it is inappropriate for my product (**Waiver Request**). I am attaching a complete justification for this request, including technical reasons, data and references to relevant EPA regulations, guidelines or policies. [Note: any supplemental data must be submitted in the format required by P.R. Notice 86-5]. I understand that this is my **only** opportunity to state the reasons or provide information in support of my request. If the Agency approves my waiver request, I will **not** be required to supply the data pursuant to Section 3(c)(2)(B) of FIFRA. If the Agency denies my waiver request, I **must choose** a method of meeting the data requirements of this Notice by the due date stated by this Notice. In this case, I must, within **30 days** of my receipt of the Agency's written decision, submit a revised "Requirements Status and Registrant's Response" Form indicating the option chosen. I also understand that the deadline for submission of data as specified by the original data call-in notice will not change. By the specified due date, I will also submit: (1) a completed "**Certification With Respect To Data Compensation Requirements" form (EPA Form 8570-29)** and (2) two completed and signed copies of the **Confidential Statement of Formula (EPA Form 8570-4)**.

Items 10-13. Self-explanatory.

NOTE: You may provide **additional information** that does not fit on this form in a signed letter that accompanies this form. For example, you may wish to report that your product has already been transferred to another company or that you have already voluntarily canceled this product. For these cases, please supply all relevant details so that EPA can ensure that its records are correct.

EPA'S BATCHING OF PRODUCTS CONTAINING A RODENTICIDE CLUSTER ACTIVE INGREDIENT FOR MEETING REREGISTRATION ACUTE TOXICITY DATA REQUIREMENTS

In an effort to reduce the time, resources and number of animals needed to fulfill the acute toxicity data requirements for reregistration of products containing the active ingredient diphacinone, the Agency has batched products which can be considered similar in terms of acute toxicity. Factors considered in the sorting process include each product's active and inert ingredients (identity, percent composition and biological activity), product form (liquid, paste, solid, etc.), and labeling (e.g., signal word, precautionary labeling, etc.).

Using available information, batching has been accomplished by the process described in the preceding paragraph. Notwithstanding the batching process, the Agency reserves the right to require, at any time, acute toxicity data for an individual product should the need arise.

Registrants of products within a batch may choose to cooperatively generate, submit or cite a single battery of six acute toxicological studies to represent all the products within that batch. The registrant has several options to participate with all or some other registrants, or to deal only their own products within a batch, or to generate all the required acute toxicological studies for each of their own products. If a registrant chooses to generate the data for a batch, he/she must use one of the products within the batch as the test material. If a registrant chooses to rely upon previously submitted acute toxicity data, he/she may do so provided that the data base is complete and valid by today's standards (see acceptance criteria attached), the formulation tested is considered by EPA to be similar for acute toxicity, and the formulation has not been significantly altered since submission and acceptance of the acute toxicity data. TRB must approve any new formulations (that were presented to the Agency after the publication of the RED) before data derived from them can be used to cover other products in a batch. Regardless of whether new data is generated or existing data is referenced, registrants must clearly identify the test material by EPA Registration Number. If more than one confidential statement of formula (CSF) exists for a product, the registrant must indicate the formulation actually tested by identifying the corresponding CSF.

In deciding how to meet the product specific data requirements, registrants must follow the directions given in the Data Call-In Notice and its attachments appended to the RED. The DCI Notice contains two response forms which are to be completed and submitted to the Agency within 90 days of receipt. The first form, "Data Call-In Response," asks whether the registrant will meet the data requirements for each product. The second form, "Requirements Status and Registrant's Response," lists the product specific data required for each product, including the standard six acute toxicity tests. A registrant who wishes to participate in a batch must decide whether he/she will provide the data or depend on someone else to do so. If a registrant supplies the data to support a batch of products, he/she must select one of the following options: Developing Data (Option 1), Submitting an Existing Study (Option 4), Upgrading an Existing Study (Option 5) or Citing an Existing Study (Option 6). If a registrant depends on another's data, he/she must choose among: Cost Sharing (Option 2), Offers to Cost Share (Option 3) or Citing an Existing Study (Option 6). If a registrant does not want to participate in a batch, the choices are Options 1, 4, 5 or 6. However, a registrant should know that choosing not to participate in a batch does

not preclude other registrants in the batch from citing his/her studies and offering to cost share (Option 3) those studies.

Table 1: Batches for the active ingredient diphacinone

Batch	Registration Number	Percent Active Ingredient	Form
1	12455-25	diphacinone ... 98%	solid
	61282-1	diphacinone ... 98%	solid
	61282-5	diphacinone ... 99%	solid
2	56-23	diphacinone ... 0.005	solid
	56-41	diphacinone ... 0.005	solid
	56-42	diphacinone ... 0.005	solid
	56-44	diphacinone ... 0.005	solid
	56-57	diphacinone ... 0.005	solid
	70-133	diphacinone ... 0.005	solid
	70-170	diphacinone ... 0.005	solid
	769-653	diphacinone ... 0.005	solid
	769-655	diphacinone ... 0.005	solid
	769-660	diphacinone ... 0.005	solid
	769-669	diphacinone ... 0.005	solid
	769-670	diphacinone ... 0.005	solid
	769-671	diphacinone ... 0.005	solid
	769-787	diphacinone ... 0.005	solids
	2393-476	diphacinone ... 0.005	solid
	2393-497	diphacinone ... 0.005	solid
	2393-498	diphacinone ... 0.005	solid
	2393-501	diphacinone ... 0.005	solid
	2393-508	diphacinone ... 0.005	solid
	3487-26	diphacinone ... 0.005	solid
	5887-178	diphacinone ... 0.005	solid
	5887-180	diphacinone ... 0.005	solid
	5887-181	diphacinone ... 0.005	solid
	5887-182	diphacinone ... 0.005	solid
	6409-1	diphacinone ... 0.005	solid
	7122-32	diphacinone ... 0.005	solid
	7122-66	diphacinone ... 0.005	solid
	7122-69	diphacinone ... 0.005	solid
	11885-12	diphacinone ... 0.005	solid
	11885-15	diphacinone ... 0.005	solid
	12455-5	diphacinone ... 0.005	solid
	12455-14	diphacinone ... 0.005	solid
	12455-19	diphacinone ... 0.005	solid
	12455-29	diphacinone ... 0.005	solid
	12455-67	diphacinone ... 0.005	solid
	12455-78	diphacinone ... 0.005	solid

2	12455-80	diphacinone	... 0.005	solid
	12455-81	diphacinone	... 0.005	solid
	12455-83	diphacinone	... 0.005	solid
	12455-84	diphacinone	... 0.005	solid
	56637-1	diphacinone	... 0.005	solid
	56637-3	diphacinone	... 0.005	solid
	56637-4	diphacinone	... 0.005	solid
	61282-6	diphacinone	... 0.005	solid
	61282-7	diphacinone	... 0.005	solid
	61282-9	diphacinone	... 0.005	solid
	61282-12	diphacinone	... 0.005	solid
	61282-19	diphacinone	... 0.005	solid
	61282-23	diphacinone	... 0.005	solid
	61282-24	diphacinone	... 0.005	solid
	61282-26	diphacinone	... 0.005	solid
	AZ88001900	diphacinone	... 0.005	solid
	CA78014600	diphacinone	... 0.01	Solid
	CA79002500	diphacinone	... 0.005	solid
	CA89002000	diphacinone	... 0.005	solid
	CA89002100	diphacinone	... 0.005	solid
	CA89002200	diphacinone	... 0.01	solid
	CT881000100	diphacinone	... 0.005	solid
	CT96000200	diphacinone	... 0.005	solid
	FL78006200	diphacinone	... 0.005	solid
	FL86000300	diphacinone	... 0.005	solid
	FL88001800	diphacinone	... 0.005	solid
	GA95000700	diphacinone	... 0.005	solid
	HI91000400	diphacinone	... 0.005	solid
	HI96000800	diphacinone	... 0.005	solid
	ID82002500	diphacinone	... 0.005	solid
	ID86001800	diphacinone	... 0.005	solid
	ID87002200	diphacinone	... 0.005	solid
	ID96000500	diphacinone	... 0.005	solid
	MA77000100	diphacinone	... 0.005	solid
	MI84001200	diphacinone	... 0.005	solid
	MO97000200	diphacinone	... 0.005	solid
	MT86000300	diphacinone	... 0.005	solid
	NC92001000	diphacinone	... 0.005	solid
	NH76000100	diphacinone	... 0.005	solid
	NV88000800	diphacinone	... 0.005	solid
	OH84000300	diphacinone	... 0.005	solid
	OR76003600	diphacinone	... 0.005	solid
	OR85003800	diphacinone	... 0.005	solid
	PA82001600	diphacinone	... 0.005	solid
	SC96000200	diphacinone	... 0.005	solid

2	UT87000300	diphacinone	... 0.005	solid
	VA82001500	diphacinone	... 0.005	solid
	VA85000300	diphacinone	... 0.005	solid
	VT86000300	diphacinone	... 0.005	solid
	WA86003300	diphacinone	... 0.005	solid
	WA86003400	diphacinone	... 0.005	solid
	WA92003100	diphacinone	... 0.005	solid
	WV82000500	diphacinone	... 0.005	solid
	WV84000400	diphacinone	... 0.005	solid
	WY88000600	diphacinone	... 0.005	solid
3	769-657	diphacinone	... 0.1	solid
	769-758	diphacinone	... 0.1	solid
	2393-488	diphacinone	... 0.1	solid
	2393-517	diphacinone	... 0.1	solid
	3240-17	diphacinone	... 0.1	solid
	12455-9	diphacinone	... 0.1	solid
	12455-61	diphacinone	... 0.1	solid
	HI91000400	diphacinone	... 0.1	solid
4	12455-56	diphacinone	... 0.2	powder
	61282-8	diphacinone	... 0.2	powder

Table 2 lists the diphacinone product the Agency was unable to batch. This product was not batched because it was not considered to be similar to other products in terms of acute toxicity. The registrant of this product is responsible for meeting the acute toxicity data requirements for it individually. This product may not cite acute toxicity/ irritation data derived from any other products in this RED. The registrant may cite pre-existing data conducted on their individual product if it exists and meets current Agency standards.

Table 2: Unbatched Diphacinone Products

Registration Number	Percent Active Ingredient
2393-493	diphacinone ... 2.0

Table 3: Batches for the Active Ingredient Chlorophacinone

Batch	Registration Number	Percent Active Ingredient	Form
1	OR78001800	chlorophacinone ... 5.34%	spray
	UT78000600	chlorophacinone ... 5.34%	spray
	WA78006000	chlorophacinone ... 5.34%	spray
	WV77000300	chlorophacinone ... 5.34%	spray
2	7173-113	chlorophacinone ... 0.20%	solid
	7173-172	chlorophacinone ... 0.20%	solid
	UT77000200	chlorophacinone ... 0.28%	solid

3	56-56	chlorophacinone	... 0.005%	solid
	56-58	chlorophacinone	... 0.005%	solid
	56-69	chlorophacinone	... 0.005%	solid
	56-70	chlorophacinone	... 0.005%	solid
	5042-31	chlorophacinone	... 0.01%	solid
	7173-80	chlorophacinone	... 0.005%	solid
	7173-128	chlorophacinone	... 0.005%	solid
	7173-151	chlorophacinone	... 0.005%	solid
	7173-161	chlorophacinone	... 0.005%	solid
	7173-184	chlorophacinone	... 0.005%	solid
	7173-185	chlorophacinone	... 0.005%	solid
	*7173-190	chlorophacinone	... 0.005%	solid
	AZ77000600	chlorophacinone	... 0.005%	solid
	CA77001500	chlorophacinone	... 0.005%	solid
	CA77049600	chlorophacinone	... 0.005%	solid
	CA77049700	chlorophacinone	... 0.005%	solid
	CA80015900	chlorophacinone	... 0.005%	solid
	CA89002300	chlorophacinone	... 0.005%	solid
	CA89002400	chlorophacinone	... 0.01%	solid
	CA9002500	chlorophacinone	... 0.005%	solid
	CA93002200	chlorophacinone	... 0.01%	solid
	CT94000300	chlorophacinone	... 0.005%	solid
	ID92000300	chlorophacinone	... 0.005%	solid
	ID96001200	chlorophacinone	... 0.005%	solid
	MD78000700	chlorophacinone	... 0.005%	solid
	MI77001400	chlorophacinone	... 0.005%	solid
	MO78000100	chlorophacinone	... 0.005%	solid
	MT91000100	chlorophacinone	... 0.01%	solid
	NC77002000	chlorophacinone	... 0.005%	solid
	NV92000100	chlorophacinone	... 0.005%	solid
	NV93000300	chlorophacinone	... 0.005%	solid
	NY94000700	chlorophacinone	... 0.005%	solid
	OH79001300	chlorophacinone	... 0.005%	solid
	OR78001800	chlorophacinone	... 0.005%	solid
	OR8400480	chlorophacinone	... 0.005%	solid
	OR85000300	chlorophacinone	... 0.005%	solid
	OR92000100	chlorophacinone	... 0.005%	solid
	OR95002000	chlorophacinone	... 0.01%	solid
	OR95002600	chlorophacinone	... 0.005%	solid
	PA80004500	chlorophacinone	... 0.005%	solid
	SC78000200	chlorophacinone	... 0.005%	solid
	UT77000100	chlorophacinone	... 0.005%	solid
	VA77001500	chlorophacinone	... 0.005%	solid

3	VT76000300	chlorophacinone ... 0.005%	solid
	WA78006100	chlorophacinone ... 0.005%	solid
	WA83002600	chlorophacinone ... 0.01%	solid
	WA84002900	chlorophacinone ... 0.005%	solid
	WA92002200	chlorophacinone ... 0.005%	solid
	WA95004200	chlorophacinone ... 0.005%	solid
	WA95004400	chlorophacinone ... 0.005%	solid
	WV7700050	chlorophacinone ... 0.005%	solid

*Due to the formulation of registration number 7173-190, it is likely that the registrant would be granted a waiver of the acute inhalation toxicity study for this product if one was requested. Registrants of other products that contain substantial amounts of oil or paraffin wax should also request a waiver of the acute inhalation toxicity study for these product(s).

Table 4 lists the products the Agency was unable to batch. These products can not be batched because it was not considered to be similar to other the products in terms of acute toxicity. The registrant of these products is responsible for meeting the acute toxicity data requirements for it individually. This product may not cite acute toxicity/ irritation data derived from any other products in this RED. The registrant may cite pre-existing data conducted on their individual product (or data cited in this RED for the technical product) if it exists and it meets current Agency standards.

Table 4: Unbatched Chlorphacinone Products

Registration Number	Percent Active Ingredient	Product Type
7173-72	chlorophacinone ... 0.28%	mineral oil concentrate
7173-75	chlorophacinone ... 96.03%	technical grade

Due to the probable toxicity of registration number 7173-75, TRB will not allow other less concentrated products (beside other technical products) to bridge acute toxicity data from this technical product.

All of the following 23 products in tables 5,6 and 7 contain only one active, bromadiolone, 3-(3-(4'-bromo-(1,1'-biphenyl)-4-yl)-3-hydroxy-1-phenylpropyl)-4-hydroxy-2H-1-benzopyran-2-one.

Table 5 batches the two technicals. The RED includes data on the acute toxicity of either a pure or a very concentrated version (for acute oral toxicity), already clearly a I at the concentration tested. No further testing of the technicals is required.

Table 5: Batch 1 for the Active Ingredient Bromodialone

EPA Reg. No.	% of Bromadiolone	Formulation Type
7173-174	93.5	Solid
12455-70	96.5	Solid

Table 6 batches the two Bromadiolone manufacturing use-products, each with approximately the same concentration. It should be possible to bridge these with the technicals.

Table 6: Batch 2 for the Active Ingredient Bromodialone

EPA Reg. No.	% of Bromadiolone	Formulation Type
7173-173	1.07	Solid
12455-31	1.0	Solid

The remaining compounds have the same concentration of bromadiolone (0.005%) and are batched together for acute oral and dermal toxicity purposes. The acute inhalation toxicity is waived as all of these are baits. Product 12455-69 was tested acceptably and may be used to cite data.

Table 7: Batch 3 for the Active Ingredient Bromodialone

EPA Reg. No.	% of Bromadiolone	Formulation Type
602-306	0.005	Solid
602-308	0.005	Solid
602-313	0.005	Solid
7173-171	0.005	Solid
7173-186	0.005	Solid
7173-187	0.005	Solid
7173-188	0.005	Solid
7173-189	0.005	Solid
7173-202	0.005	Solid
7173-208	0.005	Solid
12455-34	0.005	Solid
12455-36	0.005	Solid
12455-68	0.005	Solid
12455-69	0.005	Solid
12455-75	0.005	Solid
12455-76	0.005	Solid
12455-79	0.005	Solid
12455-82	0.005	Solid
12455-86	0.005	Solid

However, the following sub-Batches are together for primary irritation testing purposes. Primary eye and dermal irritation testing needs performing.

Table 8: Batch 4 for the Active Ingredient Bromodialone

EPA Reg. No.	% of Bromadiolone	Formulation Type
602-306	0.005	Solid
602-308	0.005	Solid
602-313	0.005	Solid
7173-171	0.005	Solid

7173-186	0.005	Solid

Table 9: Batch 5 for the Active Ingredient Bromodialone

EPA REG. NO.	% of Bromadiolone	Formulation Type
7173-187	0.005	Solid
7173-188	0.005	Solid
7173-208	0.005	Solid

The batch below contains 12455-69 which was adequately tested, including primary eye and dermal irritation, acceptable for citing.

Table 10: Batch 6 for the Active Ingredient Bromodialone

EPA REG. NO.	% of Bromadiolone	Formulation Type
12455-34	0.005	Solid
12455-36	0.005	Solid
12455-68	0.005	Solid
12455-69	0.005	Solid
12455-75	0.005	Solid
12455-76	0.005	Solid
12455-79	0.005	Solid
12455-82	0.005	Solid
12455-86	0.005	Solid

All of the following 19 products contain the active ingredient bromethalin (N-methyl-2,4-dinitro-N-(2,4,6-tribromophenyl)-6-(trifluoromethyl)benzeneamine). The HED chapter for the RED indicates the acute toxicity of this active is complete and valid. There are two (2) Manufacturing Use (MU) Products, a 2% solid concentrate and a 1.5% liquid concentrate, which are batched together. The highest concentration Manufacturing Use Product -- 67517-64, is the only product to have been tested, and it has nearly complete toxicity information. Only the dermal sensitization was not performed. The active is not a dermal sensitizer, but the products all have various inerts which may or may not be sensitizers.

These products are all baits and the inerts are primarily food-stuffs. Except for the MU products, all are batched together, and the toxicity ratings for the batch could be bridged from data on the 2% concentrate, along with the conductance of an acceptable dermal sensitization study on 67517-66 or 67517-76. If the dermal sensitization study is positive, more studies may be required.

Table 11: Batching for the Active Ingredient Bromethalin

Batch	EPA Reg. No.	% of Bromethalin	Formulation Type
1	67517-64	2.0	Solid
	67517-65	1.5	Liquid

2	432-746	0.01	Solid
	432-747	0.01	Solid
	432-748	0.01	Solid
	8845-125	0.01	Solid
	67517-63	0.005	Solid
	67517-66	0.01	Solid
	67517-67	0.01	Solid
	67517-68	0.01	Solid
	67517-69	0.01	Solid
	67517-70	0.01	Solid
	67517-71	0.01	Solid
	67517-72	0.01	Solid
	67517-73	0.01	Solid
	67517-74	0.01	Solid
	67517-75	0.01	Solid
	67517-76	0.01	Solid
	67517-77	0.01	Solid

Table 12: The Batches for the Active Ingredient Brodifacoum

Batch	EPA Reg. No.	Percent Active Ingredient	Form
1	10182-28	brodifacoum ... 0.25%	liquid
	10182-384	brodifacoum ... 0.25%	liquid
2	3282-65	brodifacoum ... 0.005%	solid
	3282-66	brodifacoum ... 0.005%	solid
	3282-74	brodifacoum ... 0.005%	solid
	3282-79	brodifacoum ... 0.005%	solid
	3282-81	brodifacoum ... 0.005%	solid
	10182-20	brodifacoum ... 0.005%	solid
	10182-21	brodifacoum ... 0.005%	solid
	10182-24	brodifacoum ... 0.005%	solid
	10182-25	brodifacoum ... 0.005%	solid
	10182-26	brodifacoum ... 0.005%	solid
	10182-38	brodifacoum ... 0.005%	solid
	10182-39	brodifacoum ... 0.005%	solid
	10182-40	brodifacoum ... 0.005%	solid
	10182-41	brodifacoum ... 0.005%	solid
	10182-48	brodifacoum ... 0.005%	solid
	10182-60	brodifacoum ... 0.005%	solid

2	10182-61	brodifacoum	... 0.005%	solid
	10182-75	brodifacoum	... 0.005%	solid
	10182-76	brodifacoum	... 0.005%	solid
	10182-93	brodifacoum	... 0.005%	solid
	10182-334	brodifacoum	... 0.005%	solid
	10182-335	brodifacoum	... 0.005%	solid
	10182-336	brodifacoum	... 0.005%	solid
	10182-337	brodifacoum	... 0.005%	solid
	10182-338	brodifacoum	... 0.005%	solid
	10182-339	brodifacoum	... 0.005%	solid
	10182-339	brodifacoum	... 0.005%	solid
	10182-340	brodifacoum	... 0.005%	solid
	10182-341	brodifacoum	... 0.005%	solid
	11715-218	brodifacoum	... 0.005%	solid

Table 13 lists the product the Agency was unable to batch. This product can not be batched because it was not considered to be similar to other the products in terms of acute toxicity. The registrant of this product is responsible for meeting the acute toxicity data requirements for it individually. This product may not cite acute toxicity/ irritation data derived from any other products in this RED. The registrant may cite pre-existing data conducted on their individual product if it exists and it meets current Agency standards.

Table 13: Unbatched Brodifacoum Products

Registration Number	Percent Active Ingredient
10182-29	brodifacoum ... 90%

Due to the toxicity profile of registration number 10182-29, TRB will not allow other less concentrated products to bridge acute toxicity data from this technical product.

There was only one technical product for pival and the sodium salt of pival each, and no end-use products. As such, the two products covered in this RED could not be placed into batches. These products are placed into the “No Batch” group. The registrant of these two products must cite a *separate* set of acute toxicity data to support each of these products. Table 1 displays the two products covered by this RED.

Table 14: No Batch Group for the Active Ingredient Pival and Sodium Salt

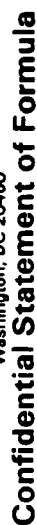
Registration Number	Active Ingredient
3240-9	pival ... 99.99%
3240-10	pival, sodium salt ... 99.99%

Cost Share, Data Compensation Forms, Confidential Statement of Formula Form and Instructions

The Confidential Statement of Formula (CSF) Form 8570-4 must be used. Two legible, signed copies of the form are required. Following are basic instructions:

- a. All the blocks on the form must be filled in and answered completely.
- b. If any block is not applicable, mark it N/A.
- c. The CSF must be signed, dated and the telephone number of the responsible party must be provided.
- d. All applicable information which is on the product specific data submission must also be reported on the CSF.
- e. All weights reported under item 7 must be in pounds per gallon for liquids and pounds per cubic feet for solids.
- f. Flashpoint must be in degrees Fahrenheit and flame extension in inches.
- g. For all active ingredients, the EPA Registration Numbers for the currently registered source products must be reported under column 12.
- h. The Chemical Abstracts Service (CAS) Numbers for all actives and inerts and all common names for the trade names must be reported.
- I. For the active ingredients, the percent purity of the source products must be reported under column 10 and must be exactly the same as on the source product's label.
- j. All the weights in columns 13.a. and 13.b. must be in pounds, kilograms, or grams. In no case will volumes be accepted. Do not mix English and metric system units (i.e., pounds and kilograms).
- k. All the items under column 13.b. must total 100 percent.
1. All items under columns 14.a. and 14.b. for the active ingredients must represent pure active form.
- m. The upper and lower certified limits for ail active and inert ingredients must follow the 40 CFR 158.175 instructions. An explanation must be provided if the proposed limits are different than standard certified limits.

- n. When new CSFs are submitted and approved, all previously submitted CSFs become obsolete for that specific formulation.



United States Environmental Protection Agency
Office of Pesticide Programs (TS-767)
Washington, DC 20460

Confidential Statement of Formula

1. Name and Address of Applicant/Registrant (Include ZIP Code)

2. Name and Address of Producer (Include ZIP Code)

☐ Basic Formulation ☐ Alternate Formulation	B.	Page

See Instructions on Back

1. Name and Address of Applicant/Registrant (Include ZIP Code)		2. Name and Address of Producer (Include ZIP Code)					
3. Product Name		4. Registration No./File Symbol		5. EPA Product Mgr./Team No.		6. Country Where Formulated	
		7. Pounds/Gal or Bulk Density		8. pH		9. Flash Point/Flame Extension	
EPA USE ONLY	10. Components in Formulation (List as actually introduced into the formulation. Give commonly accepted chemical name, trade name, and CAS number.)	11. Supplier Name & Address	12. EPA Reg. No.	13. Each Component in Formulation a. Amount	14. Certified Limits % by Weight Upper Limit a. Lower Limit	15. Purpose in Formulation	
16. Typed Name of Approving Official		17. Total Weight		100%			
18. Signature of Approving Official		19. Title		20. Phone No. (Include Area Code)		21. Date	

EPA Form 8570-4 (Rev. 12-90)	Previous editions are obsolete.	If you can photocopy this, please submit an additional copy.	White - File Copy (original)	Yellow - Applicant copy



United States Environmental Protection Agency
Washington, D.C. 20460
**Certification of Offer to Cost
Share in the Development of Data**

Form Approved
OMB No. 2070-0106,
2070-0057
Approval Expires
3-31-99

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to, Chief Information Policy Branch, PM-233, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, DC 20460; and to the Office of Management and Budget, Paperwork Reduction Project (2070-0106), Washington, DC 20503.

Please fill in blanks below:

Company Name	Company Number
Product Name	EPA Reg. No.

I Certify that:

My company is willing to develop and submit the data required by EPA under the authority of the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), if necessary. However my company would prefer to enter into an agreement with one or more registrants to develop jointly or share in the cost of developing data.

My firm has offered in writing to enter into such an agreement. That offer was irrevocable and included an offer to be bound by arbitration decision under section 3(c)(2)(B)(iii) of FIFRA if final agreement on all terms could not be reached otherwise. This offer was made to the following firms on the following date(s):

Name of Firm(s)	Date of Offer

Certification:

I certify that I am duly authorized to represent the company named above, and that the statements that I have made on this form and all attachments therein are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature of Company's Authorized Representative	Date

Name and Title (Please Type or Print)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

401 M Street, S.W.
WASHINGTON, D.C. 20460

Paperwork Reduction Act Notice: The public reporting burden for this collection of information is estimated to average 1.25 hours per response for registration and 0.25 hours per response for reregistration and special review activities, including time for reading the instructions and completing the necessary forms. Send comments regarding burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Information Management Division (2137), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, DC 20460.

Do not send the completed form to this address.

Certification with Respect to Citation of Data

Applicant's/Registrant's Name, Address, and Telephone Number	EPA Registration Number/File Symbol
Active Ingredient(s) and/or representative test compound(s)	Date
General Use Pattern(s) (list all those claimed for this product using 40 CFR Part 158)	Product Name

NOTE: If your product is a 100% repackaging of another purchased EPA-registered product labeled for all the same uses on your label, you do not need to submit this form. You must submit the Formulator's Exemption Statement (EPA Form 8570-27).

☐ I am responding to a Data-Call-In Notice, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).

SECTION I: METHOD OF DATA SUPPORT (Check one method only)

☐ I am using the cite-all method of support, and have included with this form a list of companies sent offers of compensation (the Data Matrix form should be used for this purpose).	☐ I am using the selective method of support (or cite-all option under the selective method), and have included with this form a completed list of data requirements (the Data Matrix form must be used).

SECTION II: GENERAL OFFER TO PAY

[Required if using the cite-all method or when using the cite-all option under the selective method to satisfy one or more data requirements]

☐ I hereby offer and agree to pay compensation, to other persons, with regard to the approval of this application, to the extent required by FIFRA.

SECTION III: CERTIFICATION

I certify that this application for registration, this form for reregistration, or this Data-Call-In response is supported by all data submitted or cited in the application for registration, the form for reregistration, or the Data-Call-In response. In addition, if the cite-all option or cite-all option under the selective method is indicated in Section I, this application is supported by all data in the Agency's files that (1) concern the properties or effects of this product or an identical or substantially similar product, or one or more of the ingredients in this product; and (2) is a type of data that would be required to be submitted under the data requirements in effect on the date of approval of this application if the application sought the initial registration of a product of identical or similar composition and uses.

I certify that for each exclusive use study cited in support of this registration or reregistration, that I am the original data submitter or that I have obtained the written permission of the original data submitter to cite that study.

I certify that for each study cited in support of this registration or reregistration that is not an exclusive use study, either: (a) I am the original data submitter; (b) I have obtained the permission of the original data submitter to use the study in support of this application; (c) all periods of eligibility for compensation have expired for the study; (d) the study is in the public literature; or (e) I have notified in writing the company that submitted the study and have offered (i) to pay compensation to the extent required by sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA; and (ii) to commence negotiations to determine the amount and terms of compensation, if any, to be paid for the use of the study.

I certify that in all instances where an offer of compensation is required, copies of all offers to pay compensation and evidence of their delivery in accordance with sections 3(c)(1)(F) and/or 3(c)(2)(B) of FIFRA are available and will be submitted to the Agency upon request. Should I fail to produce such evidence to the Agency upon request, I understand that the Agency may initiate action to deny, cancel or suspend the registration of my product in conformity with FIFRA.

I certify that the statements I have made on this form and all attachments to it are true, accurate, and complete. I acknowledge that any knowingly false or misleading statement may be punishable by fine or imprisonment or both under applicable law.

Signature	Date	Typed or Printed Name and Title



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
401 M Street, S.W.
WASHINGTON, D.C. 20460

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Paperwork Reduction Act Notice: The public reporting burden for this collection of information is estimated to average 0.25 hours per response for registration activities and 0.25 hours per response for reregistration and special review activities, including time for reading the instructions and completing the necessary forms. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing the burden to: Director, OPPE Information Management Division (2137), U.S. Environmental Protection Agency, 401 M Street, S.W., Washington, DC 20460. Do not send the form to this address.

DATA MATRIX					
Date			EPA Reg No./File Symbol		Page of
Applicant's/Registrant's Name & Address			Product		
Ingredient					
Guideline Reference Number	Guideline Study Name	MRID Number	Submitter	Status	Note
			Signature		



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Ingredient					
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Signature			Name and Title		Date

INSTRUCTIONS FOR DATA MATRIX

INSTRUCTIONS: Identify all data submitted or cited and all submitters from whom permission has been received or to whom offers to pay have been sent by entering sufficient information in the attached matrix (photocopy and attach additional pages as necessary). Complete all columns; omission of essential information will delay approval of the registration/reregistration. On each page enter the date, Applicant's/Registrant's name, EPA Registration Number or application file symbol of the product, ingredient, page number, and total number of pages.

The Data Compensation Form entitled "Certification with Respect to Citation of Data" and the Data Matrix will be publicly available, except for the Guideline Reference Number, Guideline Study Name, and MRID Number columns after the registration/reregistration of this product has been granted or once this form is received in response to a Data-Call-In Notice. However, the information in the Guideline Reference Number, Guideline Study Name, and MRID Number columns is available through the Freedom of Information Act in association with the EPA Registration Number.

Ingredient: Identify the active ingredient(s) in this product for which data are cited. The active ingredient(s) are to be identified by entering the chemical name and the CAS registry number. Begin a new page for each separate active ingredient for which data are cited. If bridging data from a related chemical or representative test compound are cited, enter the identity of that chemical/representative test compound including the EPA Registration Number/File Symbol if appropriate.

If the cite-all method is used for all data supporting this particular ingredient, enter "CITE-ALL" in the Guideline Reference Number column and leave the Guideline Study Name column blank. If the cite-all method is used for a particular Guideline Reference Number enter "CITE-ALL" in the MRID Number column on the line for that Guideline Reference Number. In either case, enter all submitters to whom offers to pay have been sent on subsequent lines. [Note: if the selective method of support is used and written authorization (letter of permission) is provided, the individual Guideline Reference Number, Guideline Study Name, and MRID Number columns must still be completed.] Otherwise:

Guideline Reference Number: Enter on separate lines in numerical order the Guideline Reference Numbers from 40 CFR Part 158 for all studies cited to support the registration/reregistration for this ingredient.

Guideline Study Name : For each Guideline Reference Number cited, enter the corresponding Guideline Study Name.

MRID Number: For each individual study cited in support of a Guideline Reference Number and Guideline Study Name, enter the Master Record Identification (MRID) Number listed in the Pesticide Document Management System (PDMS). Enter only one MRID Number on each line. Note that more than one MRID Number may be required per Guideline Reference Number. Note: Occasionally a study required to maintain a registration/re registration is not associated with a Guideline Reference Number and Guideline Study Name. In such case, enter the MRID Number(s) for the study(ies).

Submitter: Using the most recent Data Submitters List, identify the Original Data Submitter with their current address for each study cited. The EPA assigned company number or other abbreviation may be used. Clearly explain any variations (alternate addresses, data owners not on the Data Submitters List, etc.) in footnotes to this table.

Status: Enter one of the following codes for each study cited, as appropriate:

OWN: I am the Original Data Submitter for this study.

EXC: I have obtained written permission of the Original Data Submitter to cite this exclusive-use study in support of this application.

PER: I have obtained the permission of the Original Data Submitter to use this study in support of this application.

OLD: The study was submitted more than 15 years ago and all periods of compensation have expired.

PL: The study is in the public literature.

PAY: I have notified in writing the Original Data Submitter or, if the cite-all method is used, all companies listed in the most current Data Submitters List for this ingredient, and have offered (a) to pay compensation in accordance with FIFRA sections 3(c)(1)(F) and/or 3(c)(2)(B), and (b) to commence negotiations to determine the amount and terms of compensation, if any, to be paid for the use of the study(ies).

GAP: This Guideline data requirement is a data gap as defined in 40 CFR sections 152.83(a) and 152.96.

FOR: I am taking the formulator's exemption for this ingredient only. Other columns of this line should be marked "NA". However, if this product is to be registered/reregistered for additional uses for which the purchased EPA registered ingredient is not supported, additional data must be submitted or cited here to support those uses.

Note:

If additional explanation is needed, enter a footnote number in this column and attach the corresponding explanation.

United States Environmental Protection Agency
Washington, DC 20460



Form Approved
OMB No. 2070-0107,
2070-0057
Approval Expires
3-31-99

**CERTIFICATION WITH RESPECT TO
DATA COMPENSATION REQUIREMENTS**

Public reporting burden for this collection of information is estimated to average 15 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to, Chief, Regulatory Information Division, Mail Code 2137, U.S. Environmental Protection Agency, 401 M St., S.W., Washington, DC 20460; and to the Office of Management and Budget, Paperwork Reduction Project (2070-0106), Washington, DC 20503.

Please fill in blanks below.

Company Name	Company Number
Product Name	EPA Reg. No.

I Certify that:

- For each study cited in support of registration or reregistration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) that is an exclusive use study, I am the original data submitter, or I have obtained the written permission of the original data submitter to cite that study.
- That for each study cited in support of registration or reregistration under FIFRA that is NOT an exclusive use study, I am the original data submitter, or I have obtained the written permission of the original data submitter, or I have notified in writing the company(ies) that submitted data I have cited and have offered to: (a) Pay compensation for those data in accordance with sections 3(c)(1)(F) and 3(c)(2)(D) of FIFRA; and (b) Commence negotiation to determine which data are subject to the compensation requirement of FIFRA and the amount of compensation due, if any. The companies I have notified are: (check one)

☐ The companies who have submitted the studies listed on the back of this form or attached sheets, or indicated on the attached "Requirements Status and Registrants' Response Form,"
- That I have previously complied with section 3(c)(1)(F) of FIFRA for the studies I have cited in support of registration or reregistration under FIFRA.

Signature	Date

Name and Title (Please Type or Print)

GENERAL OFFER TO PAY: I hereby offer and agree to pay compensation to other persons, with regard to the registration or reregistration of my products, to the extent required by FIFRA section 3(c)(1)(F) and 3(c)(2)(D).

Signature	Date

Name and Title (Please Type or Print)

The following is a list of available documents for the Rodenticide Cluster that may further assist you in responding to this Reregistration Eligibility Decision document. These documents may be obtained by the following methods:

Electronic

File format: Portable Document Format (.PDF) Requires Adobe® Acrobat or compatible reader. Electronic copies can be downloaded from the Pesticide Special Review and Reregistration Information System at 703-308-7224. They are available on the Internet using ftp on FTP.EPA.GOV, or using WWW (World Wide Web) on WWW.EPA.GOV., or contact CP Moran at (703)-308-8590.

1. PR Notice 86-5.
2. PR Notice 91-2 (pertains to the Label Ingredient Statement).
3. A full copy of this RED document.
4. A copy of the fact sheet for Cases 2100, 2205, 2755, 2760, 2765, and 2810.

The following documents are part of the Administrative Record for the Rodenticide Cluster RED and may be included in the EPA's Office of Pesticide Programs Public Docket. Copies of these documents are not available electronically, but may be obtained by contacting the person listed on the Chemical Status Sheet.

1. Health and Environmental Effects Science Chapters.
2. Detailed Label Usage Information System (LUIS) Report.

The following Agency reference documents are not available electronically, but may be obtained by contacting the person listed on the Chemical Status Sheet of this RED document.

1. The Label Review Manual.
2. EPA Acceptance Criteria

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Anticoagulant Rodenticide Exposure in an Urban Population of the San Joaquin Kit Fox

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ABSTRACT: Concerned that San Joaquin kit foxes from urban areas may be exposed to commensal anticoagulants, the California Department of Fish and Game, Pesticide Investigations Unit, in conjunction with the Endangered Species Recovery Program's Urban Kit Fox Project, began monitoring San Joaquin kit foxes from the Bakersfield, CA population. Necropsies were performed and liver tissue samples collected from kit fox carcasses. Livers from archived kit foxes dating back to 1977 were also analyzed. A non-urban population of San Joaquin kit foxes from Lokern was used as a control. Other predators in the area, including coyotes and red foxes, were also analyzed for comparison. Between 1999 and 2007, tissue samples from 45 animals have been analyzed for residues of anticoagulant rodenticides. Anticoagulant compounds identified included brodifacoum, bromadiolone, pival, and chlorophacinone. Twenty-six of the 30 San Joaquin kit foxes from Bakersfield contained at least one anticoagulant, and the most commonly detected anticoagulant was brodifacoum. None of the 12 Lokern San Joaquin kit foxes contained anticoagulants. Other predators followed the same pattern: both red foxes from Bakersfield contained anticoagulant residues, but the coyote taken from Lokern did not.

KEY WORDS: anticoagulants, brodifacoum, bromadiolone, chlorophacinone, diphacinone, kit fox, pival, rodenticide, *Vulpes macrotis*

Proc. 23rd Vertebr. Pest Conf. (R. M. Timm and M. B. Madon, Eds.)
Published at Univ. of Calif., Davis. 2008. Pp. 163-165.

INTRODUCTION

Monitoring by the California Department of Fish and Game (DFG) Pesticide Investigations Unit has shown that a number of predatory avian and mammalian species that inhabit the urban landscape have been exposed to anticoagulant rodenticides, presumably as a result of secondary exposure (Hosea 2000). Species that had residues of anticoagulants were coyote *Canis latrans*, gray fox *Urocyon cinereoargenteus*, San Joaquin kit fox *Vulpes macrotis mutica*, raccoon *Procyon lotor*, fox squirrel *Sciurus niger*, bobcat *Lynx rufus*, red fox *Vulpes vulpes*, mountain lion *Felis concolor*, Heermann's kangaroo rat *Dipodomys heermanni*, golden eagle *Aquila chrysaetos*, great horned owl *Bubo virginianus*, barn owl *Tyto alba*, red-shouldered hawk *Buteo lineatus*, red-tailed hawk *Buteo jamaicensis*, Cooper's hawk *Accipiter cooperii*, turkey vulture *Cathartes aura*, and wild turkey *Meleagris gallopavo*. The most frequently detected anticoagulant was brodifacoum. Anticoagulant rodenticides vary in terms of persistence in tissues, and brodifacoum, difethialone, and bromadiolone (second-generation anticoagulants) are the most persistent. In addition, as the second-generation anticoagulants may require several days to cause mortality, there is opportunity for rodents to ingest several doses and be available for predation while carrying high concentrations of anticoagulants.

A population of San Joaquin kit foxes *V. m. mutica* inhabits part of the City of Bakersfield in Kern County, California. This subspecies is currently federally listed as endangered and by the State of California as threatened. The proximity of this predator population to the urban environment puts kit foxes at elevated risk for secondary

exposure to rodenticides used by homeowners and businesses. This urban population contributes to conservation and recovery efforts by contributing to the genetic diversity of the subspecies and serving as a source population for reintroduction efforts.

METHODS

San Joaquin kit fox carcasses were recovered by the Endangered Species Recovery Program (ESRP; California State University–Stanislaus) in an ongoing monitoring effort dating back to 1977. Approximately 10-20 carcasses were recovered per year from both urban (Bakersfield) and non-urban (Lokern) areas. The Lokern Natural Area is 40,000 acres of high-quality habitat located approximately 30 miles west of Bakersfield. The land is managed by a number of owners, including the California Department of Fish and Game and the Bureau of Land Management. The management objective is to maintain a functioning desert ecosystem for a number of sensitive species, including Kern mallow *Eremalche kernensis*, giant kangaroo rat *Dipodomys ingens*, Tipton kangaroo rat *Dipodomys nitratoideus nitratoideus*, San Joaquin antelope squirrel *Ammospermophilus nelsoni*, blunt-nosed leopard lizard *Gambelia sila*, and San Joaquin kit fox. Thirty San Joaquin kit fox liver samples from Bakersfield and 12 Lokern liver samples were analyzed. Two liver samples from red foxes recovered from Bakersfield, and one from a coyote recovered from Lokern, were also analyzed.

Liver tissue was homogenized by the DFG Pesticide Investigations Unit in Rancho Cordova, CA, and analyzed by DFG Water Pollution Control Laboratory in Rancho Cordova, CA, using high performance liquid chromatog-

Table 1. Anticoagulant residues in San Joaquin kit fox livers collected in Lokern (in ng/g fresh weight). ND = not detected.

Individual	Brodifacoum	Bromadiolone	Chlorophacinone	Diphacinone	Warfarin	Pival
1	ND	ND	ND	ND	ND	ND
2	ND	ND	ND	ND	ND	ND
3	ND	ND	ND	ND	ND	ND
4	ND	ND	ND	ND	ND	ND
5	ND	ND	ND	ND	ND	ND
6	ND	ND	ND	ND	ND	ND
7	ND	ND	ND	ND	ND	ND
8	ND	ND	ND	ND	ND	ND
9	ND	ND	ND	ND	ND	ND
10	ND	ND	ND	ND	ND	ND
11	ND ¹	ND ¹	ND ²	ND ²	ND ¹	ND ²
12	ND ¹	ND ¹	ND ²	ND ²	ND ¹	ND ²
Detection limit	0.2	0.2	2	2	1	2

¹Detection limit = 7 ng/g, fresh weight.²Detection limit = 50 ng/g, fresh weight

Table 2. Anticoagulant residues in San Joaquin kit fox livers collected in Bakersfield (in ng/g fresh weight). ND = not detected.

Individual	Brodifacoum	Bromadiolone	Chlorophacinone	Diphacinone	Warfarin	Pival
1	ND	13.3	ND	ND	ND	ND
2	0.678	ND	ND	ND	ND	ND
3	0.466	2.18	ND	ND	ND	ND
4	0.2	ND	ND	ND	ND	ND
5	0.2	1.17	ND	ND	ND	ND
6	1703	770	246	ND	ND	ND
7	ND	ND	ND	ND	ND	ND
8	66.4	3123	ND	ND	ND	ND
9	9855	131	ND	ND	ND	ND
10	5662	786	ND	ND	ND	ND
11	1248	902	ND	ND	ND	ND
12	4138	304	ND	ND	ND	ND
13	2818	79.2	ND	ND	ND	ND
14	2642	2477	ND	ND	ND	ND
15	8648	148	ND	ND	ND	ND
16	132	ND ¹	ND ²	ND ²	ND ¹	ND ²
17	161	ND ¹	ND ²	ND ²	ND ¹	ND ²
18	ND ¹	ND ¹	ND ²	ND ²	ND ¹	ND ²
19	191	ND ¹	ND ²	ND ²	ND ¹	6.93
20	122	ND ¹	ND ²	ND ²	ND ¹	ND ²
21	706	ND ¹	ND ²	ND ²	ND ¹	ND ²
22	381	ND ¹	ND ²	ND ²	ND ¹	ND ²
23	19	ND ¹	ND ²	ND ²	ND ¹	ND ²
24	ND ¹	ND ¹	ND ²	ND ²	ND ¹	ND ²
25	296	ND ¹	ND ²	ND ²	ND ¹	ND ²
26	9	ND ¹	ND ²	ND ²	ND ¹	ND ²
27	91	ND ¹	ND ²	ND ²	ND ¹	ND ²
28	373	ND ¹	ND ²	ND ²	ND ¹	ND ²
29	130	140	ND ²	ND ²	ND ¹	ND ²
30	11,000	ND ¹	ND ²	ND ²	ND ¹	ND ²
Detection limit	0.2	0.2	2	2	1	2

¹Detection limit = 7 ng/g, fresh weight.²Detection limit = 50 ng/g, fresh weight

Table 3. Anticoagulant residues in other predator livers collected in Bakersfield and Lokern (in ng/g fresh weight).

Species	Location	Brodifacoum	Bromadiolone	Chlorophacinone	Diphacinone	Warfarin	Pival
Red fox	Bakersfield	3667	67.9	ND	ND	ND	ND
Red fox	Bakersfield	838	974	ND	ND	ND	ND
Coyote	Lokern	ND	ND	ND	ND	ND	ND
Detection limit		0.2	0.2	2	2	1	2

raphy with mass spectrometry analysis. Anticoagulants analyzed were brodifacoum, bromadiolone, chlorophacinone, diphacinone, pival, and warfarin. Detection limits varied among anticoagulants with generally lower detection levels in the later analyses as laboratory methods were refined (Table 1).

RESULTS

San Joaquin kit fox livers taken from Lokern contained no residues of anticoagulants (Table 1). Of the 30 livers tested from Bakersfield, 26 (87%) contained residues of brodifacoum, 13 (43%) contained residues of bromadiolone, one contained a residue of chlorophacinone, and one contained a residue of pival (Table 2). Anticoagulant residues, expressed as fresh weight, were as high as 11,000 ng/g for brodifacoum (mean of 1,960 ng/g for all samples with detections), 3,123 for bromadiolone (mean of 661 ng/g for all samples with detections), 246 ng/g for chlorophacinone, and 6.93 ng/g for pival. Livers of two red foxes *V. vulpes* from Bakersfield were also analyzed and both contained both brodifacoum and bromadiolone (Table 3). A coyote liver from Lokern contained no anticoagulant residues (Table 3).

DISCUSSION

Results from this study confirmed that San Joaquin kit foxes are exposed to anticoagulants in urban environments. Eighty-seven percent of San Joaquin kit foxes in Bakersfield had been exposed to anticoagulant rodenticides, compared to none taken at the control site. The most commonly detected rodenticides, brodifacoum and bromadiolone, are registered for use only against commensal rodents. This suggests that commensal rodents are likely the source of secondary exposure for San Joaquin kit foxes. Further study on the predation habits of San Joaquin kit foxes would be helpful to determine route of exposure.

There was a single detection of pival, a first-generation anticoagulant rodenticide. The detection was in a fox that died in 2002, when all registrations for pival had been inactive for a decade or more. This product is less persistent in animal tissues than the second-generation anticoagulants, making secondary poisoning less likely. It is possible that this exposure was due to a improper disposal of an old product.

It has been noted that the lower detection limits for second-generation anticoagulant rodenticides than for the first-generation products could partially explain the greater number of detections of the newer products. However, the data in this study do not support this, as the majority of detections of the second-generation products were well above the higher detection limits used for the older products. A total of 22 out of 26 detections for brodifacoum and 12 out of 13 detections for bromadiolone were above

2 ng/g (the detection limit for first-generation anticoagulants).

The U.S. Environmental Protection Agency issued a risk mitigation decision for 9 rodenticides in May 2008. This decision will prohibit the sale of second-generation anticoagulants to homeowners, beginning in 2011. There will be a need to continue sampling to determine the effectiveness of the regulation change in reducing exposure of San Joaquin kit foxes and other predators. This is particularly true, as it is not known whether misuse or proper use of these products has resulted in secondary exposure. It will also be important to monitor first-generation anticoagulant rodenticides, as the regulations will likely result in a more frequent use of the older products by homeowners.

The consequences of anticoagulant exposure to predators are not fully known. It is likely that impairment of normal clotting factors makes animals more susceptible to excessive bleeding from minor injuries. Several studies also indicate that sub-lethal concentrations of second-generation anticoagulants may cause mortality to embryos (Laas et al. 1985, Godfrey and Lyman 1980, Munday and Thompson 2003). Population impacts that jeopardize recovery efforts of San Joaquin kit foxes may occur as a result of widespread anticoagulant exposure.

ACKNOWLEDGEMENT

This project was funded by a grant from the U.S. Fish and Wildlife Service.

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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-160-CC****Regular Business:****Consider Changes to the Downtown Menlo Park
Parking Options and Time Restrictions****Recommendation**

Staff recommends that the City Council consider the following changes to downtown parking options and time restrictions:

- a. Implement free parking time limit changes to all Downtown off-street Parking Plazas from the currently designated 2-hour limit to 3-hour limit.
- b. Implement free parking time limit changes to all Downtown on-street parking spaces from the currently designated 1-hour limit to 2-hour limit.
- c. Direct staff to prepare a report to expand pay parking options to Parking Plazas 2, 3, 4, 6, 7, and 8, after the initial free 3-hour parking limit as shown on Attachment A.

Staff anticipates returning to the Council for approval and an appropriations request on November 10, 2015 to implement these changes, if directed. A draft resolution for these modifications is included in Attachment B.

Policy Issues

Implementation of changes to Downtown parking time restrictions is in line with several policies stated in the 1994 General Plan Circulation Element. These policies seek to strengthen Downtown as a vital and competitive shopping area while encouraging the preservation and enhancement of Downtown's historic atmosphere and character. The El Camino Real/Downtown Specific Plan included recommendations for management strategies and to increase the parking supply, but did not recommend changes to the time restrictions for existing parking areas.

Background

In June 2009, the City Council authorized a detailed Downtown Menlo Park Parking Study (Study). The Study reviewed all previous Downtown parking studies since 1999, made a set of recommendations, and the City implemented the Study recommendations in 2011. The changes were intended to address the short- and long- term parking needs generated by the Downtown businesses and patrons at the time of the Study. The recommendations are listed below:

- Changed most existing Santa Cruz Avenue on-street parking to a 1-hour time limit and converted a number of other spaces to a 15-minute time limit.

- Maintained other downtown adjoining streets' on-street parking time limit to 1-hour.
- Changed downtown periphery streets' on-street parking time limit to 2-hours.
- Changed posted enforcement hours throughout the downtown area to Monday through Friday, 9:00 am to 6:00 pm.
- Converted all parking spaces in Parking Plazas 1 and 5 into pay long-term parking options after the initial free 2-hour time limit as shown on Attachment A.
- Reduced the number of annual employee parking permits at Parking Plaza 2 and reallocated a portion of this parking to less utilized Parking Plazas.

The parking supply in Downtown Menlo Park is divided among three principal types of parking:

- City-owned lots (Parking Plazas)
- Public on-street (curbside) parking facilities
- Private off-street parking facilities

Most of the parking supply is off-street with the largest single component being private lots and garages (approximately 46%), followed by the City Parking Plazas (approximately 31%), with the remaining 23% on-street parking. Most of these parking spaces have timed parking restrictions, varying from 15 minutes to 2 hours.

Since the 2011 implementation, staff has monitored community feedback related to the parking changes. In March 2015, Council held a study session to review the current parking effectiveness, including the key findings summarized below:

- Benefits:
 - Created better parking distribution throughout Downtown
 - Generated high turnover rates on Santa Cruz Avenue
 - Created long-term employee parking supply
- Ongoing Challenges:
 - Perception of aggressive enforcement, particularly in 1-hour parking areas
 - Need for additional long-term employee parking supply
 - Varying parking time limits creates confusion about where to park and for how long

Council provided direction on the Downtown parking policy at the March 2015 study session to bring back a report on:

- Developing strategies to simplify the patron experience when parking in Downtown
- Modifying time limits in the Plazas from 2-hour to 3-hour free parking
- Modifying time limits for on-street spaces from 1-hour to 2-hour free parking and 15-minute to 30-minute free parking

Each of these strategies is evaluated in the following section. No changes are expected to the Downtown plaza parking daily permit and annual business employee permit.

Analysis

In collaboration with the City Police Department, staff evaluated the potential behavioral and financial effects these strategies could have on Downtown patrons and the City. Each strategy is discussed in detail below:

Simplify Patron Experience when Parking in Downtown

In general, establishing a consistent time limit and pay option could create a more simplified parking experience for Downtown. As such, implementing a pay option for the six remaining Parking Plazas, in addition to the recommended time limit changes, would establish a more consistent Parking Plaza environment as well as provide additional long-term parking options. The implementation of a pay parking option would require new fee collection equipment at the plazas with no pay parking options and could increase the Parking Plaza demand. The preliminary estimated cost to expand the current payment collection system to six additional Parking Plazas is approximately \$210,000. However, with potentially more cost effective new technology available in the market, as a follow up to this report, staff recommends a cost/benefit evaluation of existing versus newer equipment to determine the best option to select for implementation. If approved, the estimated timeline to evaluate equipment and placement layout options would be three to four months. Issues to consider for evaluating new fee collection equipment include: visibility, convenience, ease of operation, cost, and compatibility with the current enforcement system.

Modify Plaza Time Limits

The recommended time limit change from 2-hour to 3-hour free parking to all eight plazas could result in a demand increase in the non-pay Parking Plazas and a shift from the existing pay Parking Plazas (Plazas 1 and 5). The increased demand would likely vary between plazas based on adjacent land uses and could increase existing parking uses to near or at full capacities. The time limit change would also result in revenue losses, with decreased parking tickets purchased for stays longer than 2-hours. In addition, the change may impact the parking enforcement officers' staff time. If these changes are approved by Council and implemented, the Police Department has suggested an evaluation of the required staff time prior to making any staffing modifications. To complete these changes, approximately 60 non-standard signs, would need to be replaced across all eight plazas.

Modify On-Street Parking Time Limits

The recommended time limit change from all existing 1-hour free parking on-street facilities to 2-hour free parking could result in a demand increase in on-street parking and a shift from the Parking Plazas. The increased demand would likely vary based on adjacent land uses and could result in less availability for existing patrons. The time limit change could also result in revenue losses with decreased parking citations and may impact the parking enforcement officers' staff time. If these changes are approved by Council and implemented, the Police Department has suggested an evaluation of the required staff time prior to making any staffing modifications. To complete these changes, approximately 215 signs would need to be replaced along the Downtown streets.

Council also recommended a time limit change for all existing free 15-minute on-street parking to 30-minute parking. The existing 15-minute parking is intended to encourage a high turnover rate and provide convenience for the immediate business patrons (i.e. coffee shops, to-go food pick-up, banks, dry cleaners, etc). While staff recognizes the importance of extending the time limit to accommodate

unexpected delays, the longer time limit could reduce the utility of these short-term spaces. Thus, staff recommends maintaining the existing 15-minute parking zones.

Implementation Recommendations

Postcards were sent out to all Downtown business owners, property owners, and nearby residents within a 300 feet radius of the Downtown area.

Implementation Recommendations

The suggested implementation timeline for replacing the on-street and Plaza signs would be in January 2016, following the 2015 holiday season, when the City typically extends free parking time limits in each plaza to 3-hours for holiday parking. To assess potential unintended consequences, staff recommends implementing the proposed modifications as a 6-month pilot program. Signs would be modified using a low-cost approach, using decals to update the time restrictions during the pilot program. At the 3-month and 6-month milestones during the pilot, staff will collect parking occupancy data in each Parking Plaza, and on each block within the Downtown area during enforcement hours of 9am to 6pm on a typical weekday to assess changes. Additionally, the implications for revenue and enforcement staffing will be reviewed and evaluated as part of the follow-up report. Following the 6-month pilot, staff would bring back a report to the Council in July 2016 to evaluate the program and determine if changes should be implemented permanently.

Impact on City Resources

Revenue for the Downtown Parking Fund comes from two sources: Plaza ticket sales and Plaza permit sales. Staff has estimated potential revenue gain/loss based on available financial data. An itemized summary is provided below:

Annual Revenue Gain/Loss to Downtown Parking Fund Estimate	
Total Parking Plaza Ticket Sales	\$60,000
<i>Anticipated Annual Revenue Loss with 1 Hour Time Limit Extension (Plazas 1& 5)¹</i>	<i>(\$24,000)</i>
Annual Parking Plaza permit sales (671 of 685 at \$592/permit)	\$397,230
Notes:	
1. Based on extrapolation of December 2014 ticket sales, during which the Parking Plaza free parking time limit was extended from 2 hours to 3 hours.	

Revenues from parking violation citations are incorporated into the City's General Fund. In 2014, the City collected approximately \$795,000 from parking violations (28% of this amount is paid to state/local processing fees), for a net gain of \$572,400. It is anticipated that with extending parking time limits as recommended, the revenue from violations would decrease; the projected decrease cannot readily be determined based on citation records. However, during the pilot program implementation, staff will assess the revenue implications from decreased citations as part of the pilot evaluation.

The cost to implement the time limit changes as recommended above in Recommendations A and B, is estimated to be approximately \$10,300, including staff time for the pilot program installation, as detailed below. If Recommendation C is approved (expand pay options to non-pay Parking Plazas), a cost/benefit evaluation of existing versus new parking fee collection system will be prepared separately.

Staff has estimated replacement of off-street and on-street sign quantities based on existing on-site inventory and plaza size. A summary of the itemized cost for the recommended pilot program, including installation fee, is provided below:

Cost Estimate for Pilot Program			
	Recommendation A: New Plaza Signs for 2-Hr to 3-Hr Parking	Recommendation B: New On-Street Signs for 1-Hr to 2-Hr Parking	Total
Furnish and install (by City) decals	\$1,200	\$4,300	\$5,500
Staff coordination, implementation time	\$2,400	\$2,400	\$4,800
Total Cost	\$3,600	\$6,700	\$10,300

Additionally, staff has estimated the cost for sign replacement if the modifications were to be permanently installed at the conclusion of the pilot program, as provided below:

Cost Estimated for Potential Permanent Installation			
	Recommendation A: New Plaza Signs for 2-Hr to 3-Hr Parking	Recommendation B: New On-Street Signs for 1-Hr to 2-Hr Parking	Total
Furnish (by City) and install (by Contractor) signs	\$17,500	\$31,500	\$49,000
Staff coordination, implementation time	\$9,000 (for non-standard sign design)	\$6,000 (for standard sign design)	\$15,000
Total Cost	\$26,500	\$37,500	\$64,000

An appropriation in the amount of \$10,300 from the Downtown Parking Fund for the pilot program will be requested if approved by the Council.

Environmental Review

The implementation of the timed restriction changes in downtown Menlo Park is categorically exempt under Class 1 of the current California Environmental Quality Act Guidelines. Class 1 allows for minor alterations of existing facilities, including existing highways and streets, sidewalks, gutters, bicycle and pedestrian access, and similar facilities, as long as there is negligible or no expansion of use.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

- A. Downtown Parking Map
- B. Draft Resolution to Approve Changes to the Downtown Menlo Park Parking Options and Time Restrictions

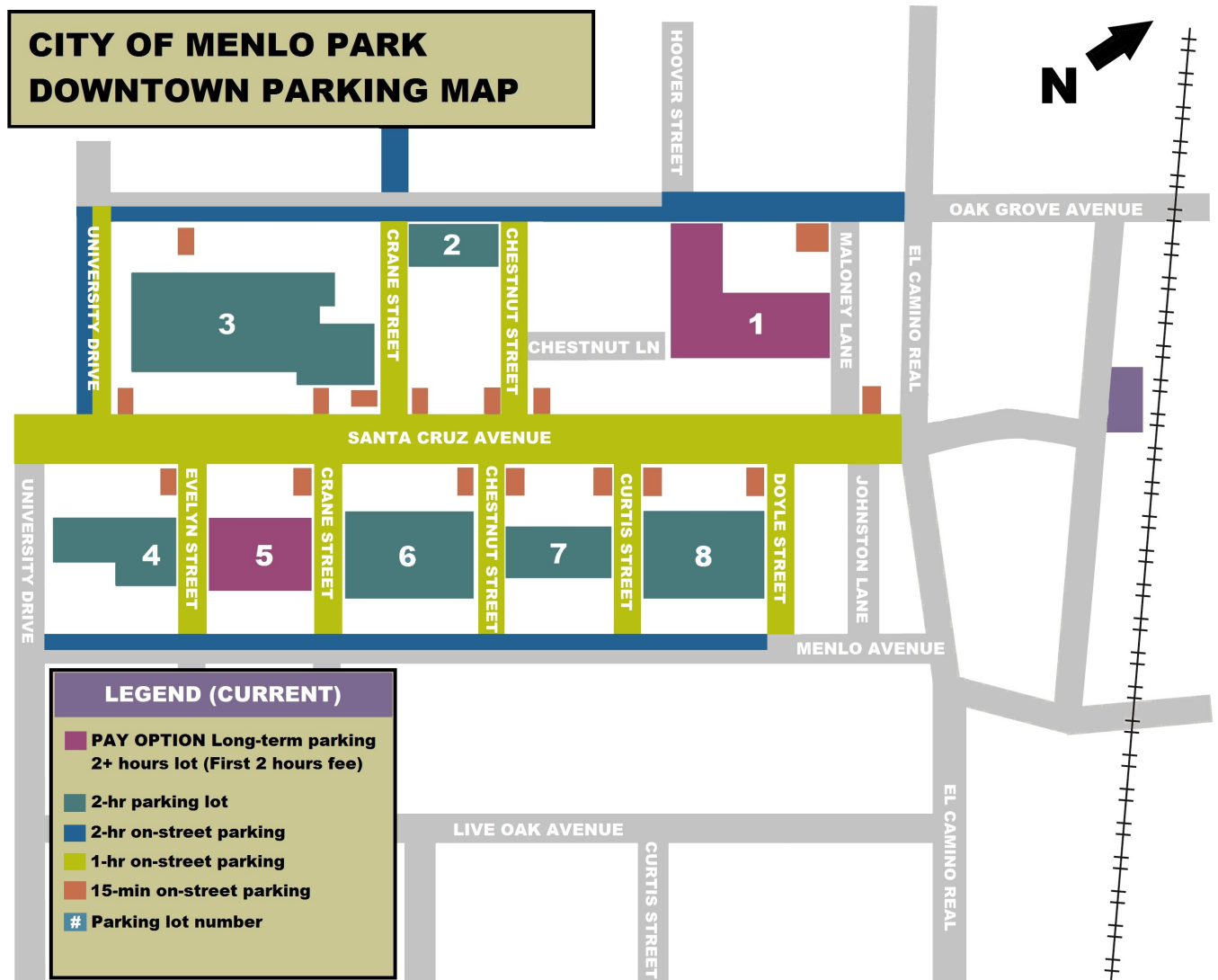
Report prepared by:

Kevin Chen, Assistant Engineer, Transportation

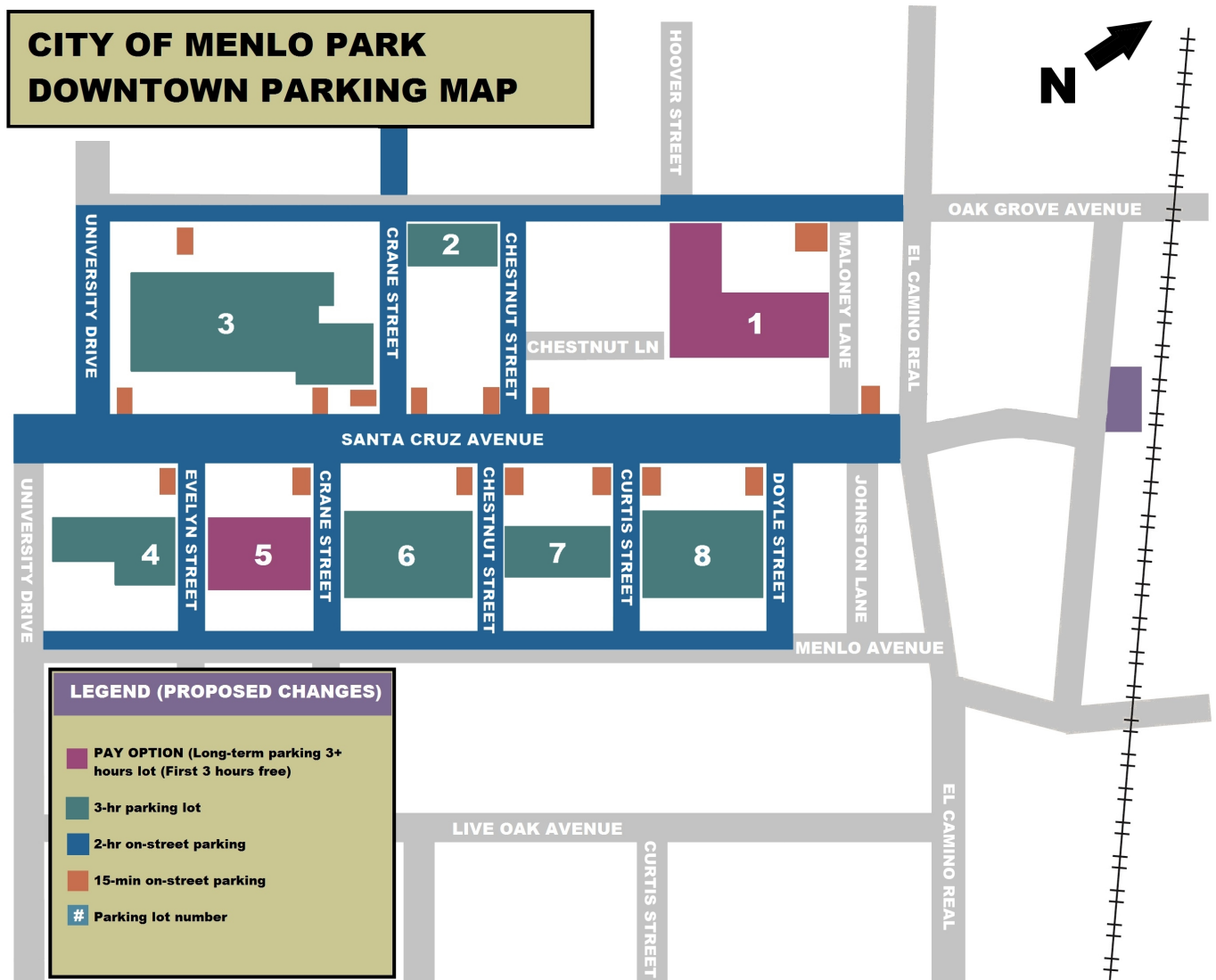
Report reviewed by:

Nicole H. Nagaya, P.E, Transportation Manager

CURRENT:



PROPOSED:



RESOLUTION NO.

**ADOPT A RESOLUTION AUTHORIZING CHANGES TO THE DOWNTOWN
MENLO PARK PARKING OPTIONS AND TIME RESTRICTIONS AND THE
APPROPRIATE FUND FROM THE DOWNTOWN PARKING PERMIT FUND TO
IMPLEMENT APPROVED CHANGES**

The city of Menlo Park, acting by and through its City Council, having considered and been fully advised in the matter and good cause,

NOW, THEREFORE, BE IT RESOLVED, the City Council of Menlo Park does hereby approve the implementation of a 6-month pilot program for the on- and off- street parking time restriction changes in Downtown Menlo Park as follows: a) changes all Downtown off-street Parking Plazas from 2-hour free parking limit to 3-hour limit, b) change all Downtown on-street parking spaces from 1-hour free parking limit to 2-hour limit; and

BE IT FURTHER RESOLVED, the City Council of Menlo Park does hereby approve the cost/benefit evaluation of existing versus newer equipment for all Parking Plazas and associated expenditure.

I, Pamela Aguilar, City Clerk of Menlo Park, do hereby certify that the above and foregoing Council Resolution was duly and regularly passed and adopted at a meeting by said Council on the tenth day of November, 2015, by the following votes:

AYES:

NOES:

ABSENT:

ABSTAIN:

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the Official Seal of said City on this tenth day of November, 2015.

Pamela Aguilar
City Clerk

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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-153-CC****Regular Business:****Provide Direction on Proposed Police and Public Works Antenna Structure at the Civic Center****Recommendation**

Staff recommends that the Council select the monopole antenna for the Police and Public Works antenna structure at the Civic Center.

Policy Issues

This recommendation does not represent any change to existing City's policy.

Background

The City of Menlo Park's primary radio communication system relies upon the antenna/transmitter located at the roof of the training center of the Menlo Park Fire Protection District Station No. 1 at 300 Middlefield Road. The Fire District's antenna structure functions as the primary signal broadcaster for the City's Police and Public Works transmissions because the height of the City's antenna is inadequate to provide coverage north of Highway 101. The City's existing antenna structure is located adjacent to the City's dispatch center and is used as a secondary standby emergency transmitter. The City's antenna structure was installed in September 2000 and consists of a standing lattice-style tower approximately 60 feet high. The Fire District is planning to renovate their training structure, which would require the removal of the antenna used by the City.

In October of 2014, staff presented the City Council with design options for replacing the existing City antenna structure. The presentation included renderings of the proposed antenna from various locations or perspectives. Attachment A is a copy of the staff report. During the October 2014 meeting, the City Council requested two additional perspectives of the proposed antenna structure from surrounding areas to see what the antenna would look like from an aesthetic point of view.

Analysis

Staff developed additional perspectives of what the antenna would look like from specific locations around the civic center. The City Council requested perspective views from the Burgess Sports field and from Laurel Street adjacent to the Burgess Pool.

The existing City antenna structure is a lattice structure and staff is proposing a taller (120 foot) monopole structure as reflected in Attachment C to provide coverage for all the City areas. Another option presented in October was a monopine structure which is intended to appear more similar to a tree. However, several of the artificial tree branches would need to be removed in locations where the sub-antennas connect to the main pole to minimize interference the radio transmissions. Also, the cost of the monopine antenna

structure is estimated to increase the existing budget of \$300,000 by an additional \$100,000 depending on the final design. The increase in cost is due to the additional structural design to support the wind load due to the artificial branches and the additional construction costs. The monopine structure is more difficult and expensive to maintain due to the artificial branches, which require more specialized equipment for maintenance or replacement.

Since the October 2014 Council Meeting, staff contacted the Fire District regarding the status of their training structure project, which will affect their antenna structure, and learned that their project is currently on hold. The Fire District maintains leases with cellular carriers whose leases expire at different times, and the Fire District is unable to terminate those leases without paying penalties. Staff plans to use the Fire District antenna as a secondary transmitter as long as it remains in place.

Impact on City Resources

There is a total budget of \$300,000. Based upon City Council's feedback, the budget for the project may need to be increased by up to \$100,000. The actual amount will be determined when the project is put out to bid.

Environmental Review

This Council action is not subject to environmental review.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

- A. Staff Report from October 21, 2014
- B. Aerial View of existing Antenna Location Map
- C. View of Antenna Structure from Laurel St near Burgess Pool
- D. View of Antenna Structure from Burgess Park

Report prepared by:
Ruben Niño, Assistant Public Works Director



PUBLIC WORKS DEPARTMENT

Council Meeting Date: October 21, 2014
Staff Report #: 14-185

Agenda Item #: SS-1

STUDY SESSION: Provide Direction on Proposed Police and Public Works Antenna Structure Design

RECOMMENDATION

Staff is seeking City Council feedback on the design of the proposed Police and Public Works antenna structure at the Civic Center.

BACKGROUND

The City of Menlo Park's primary radio communication system relies upon the antenna/transmitter located at the roof of the training center of Fire District Station No. 1 at 300 Middlefield Road. The Fire District's antenna functions as the primary signal broadcaster for the Police and Public Works transmissions. The City's current antenna located adjacent to the Dispatch Center is used as a secondary standby emergency transmitter because the height is inadequate to provide coverage north of Highway 101. This antenna/transmitter was installed in September 2000 and is a lattice-style tower standing approximately 60 feet in height. A site plan of the Administration Building showing the antenna's location is provided in Attachments A and B for reference.

The current connecting infrastructure between the Menlo Park Police dispatch center in the Civic Center and the primary antenna/transmitter at Fire Station No. 1 is an outdated system with old AT&T phone circuits constructed of copper wires, making it potentially prone to disruptions or failures due to its age. Dispatchers can switch to the backup transmitter (at the Administration Building) if the system at Fire Station No. 1 fails. This occurs randomly, several times per year, limiting communication with emergency units north of Highway 101.

The Menlo Park Fire District is in the planning stage of renovating its training center which would require the removal of the antenna at Fire Station No. 1. The District is not interested in Co-locating its antenna with the City. Therefore, staff has proposed replacing the existing antenna at the Civic Center with a new taller antenna that would serve only Police and Public Works and not be dependent upon the Fire District No. 1 antenna structure. The installation of a new antenna/transmission system will allow addressing current and future needs of the Police and Public Works Departments.

The proposed new antenna structure would replace the existing 60 foot antenna structure with an approximately 120 foot structure in order to be above the current tree

line and be able to connect north of Highway 101. In addition, a new County microwave antenna will be installed on the proposed structure in order to be able to communicate with other municipalities and government agencies throughout the County. In theory, the County microwave antenna would remain operational after a major earthquake or other disasters, should the landline and cellular phone systems fail. This program has been in San Mateo County for 30 years. Previously, Menlo Park decided not to participate due to the aesthetics and structure required to secure the original County antennas, which were large diameter dishes. Currently, almost all other cities in the County have a County microwave antenna. The proposed County antenna is four (4) feet in diameter and weighs significantly less than the previous dishes. For emergency preparation purposes, it is imperative that Menlo Park has this back up in place, especially as it may become the only way to communicate after a major disaster aside from satellite phones. The project and funding is in the Capital Improvement Program (CIP).

The location of the proposed antenna structure was determined to be as close as possible to the radio transmitter/receiver located in the dispatch center because the antenna's signal deteriorates with every foot of cable that connects the antenna to the radio. Signal loss is minimized by keeping the coaxial cable nearby.

The antenna structure will be designed to accommodate future possible leasing of space on the structure to private wireless carriers. Staff is not recommending pursuing private wireless carriers at this time because the approval process for a private wireless carrier antenna is different for a City antenna that serves only Police and Public Works. The process for a private wireless carrier antenna will delay the project significantly due to a permit approval process that will involve greater requirements to satisfy the City's Architectural and Planning review requiring Planning Commission approval. The Police and Public Works antenna only requires Planning Commission comments which are then forwarded to the City Council for approval.

ANALYSIS

The proposed new antenna project is in the initial planning phase. Staff is looking for City Council feedback on the design of the antenna structure. The existing antenna structure is a lattice structure and staff is proposing a monopole that is reflected in Attachment C. Another option is to design a camouflaged structure that can make the structure appear as a tree. Numerous artificial tree branches will need to be removed where the antennas will be located in order for them not to conflict with the reception as reflected in Attachment D. The cost of the camouflaged antenna structure is estimated to increase the existing budget of \$300,000 by an additional \$100 K - \$300 K depending on how elaborate the design is. Staff is seeking City Council feedback on the type of antenna structure.

IMPACT ON CITY RESOURCES

Based upon Council feedback, the budget for the project may need to be increased and the actual amount will be determined once bids are received. In the FY 2014-15 budget there is \$200,000 and planned for the FY 2015-16 there is \$100,000 for a total budget of \$300,000.

POLICY ISSUES

This recommendation does not represent any change to existing City Policy.

ENVIRONMENTAL REVIEW

This Council action is not subject to the current California Environmental Quality Act Guidelines. Depending on option selected the project will be subject to CEQA review, Architectural Control Permit and/or a Conditional Use Permit.

PUBLIC NOTICE

Public Notification was achieved by posting the agenda, with this agenda item being listed, at least 72 hours prior to the meeting.

ATTACHMENTS

- A. Existing Antenna
- B. Existing Antenna Location Map
- C. Example of Antenna Monopole
- D. Example of Tree Antenna Structure

Report prepared by:
Ruben Niño,
Assistant Public Works Director

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Aerial View of existing Antenna Location Map

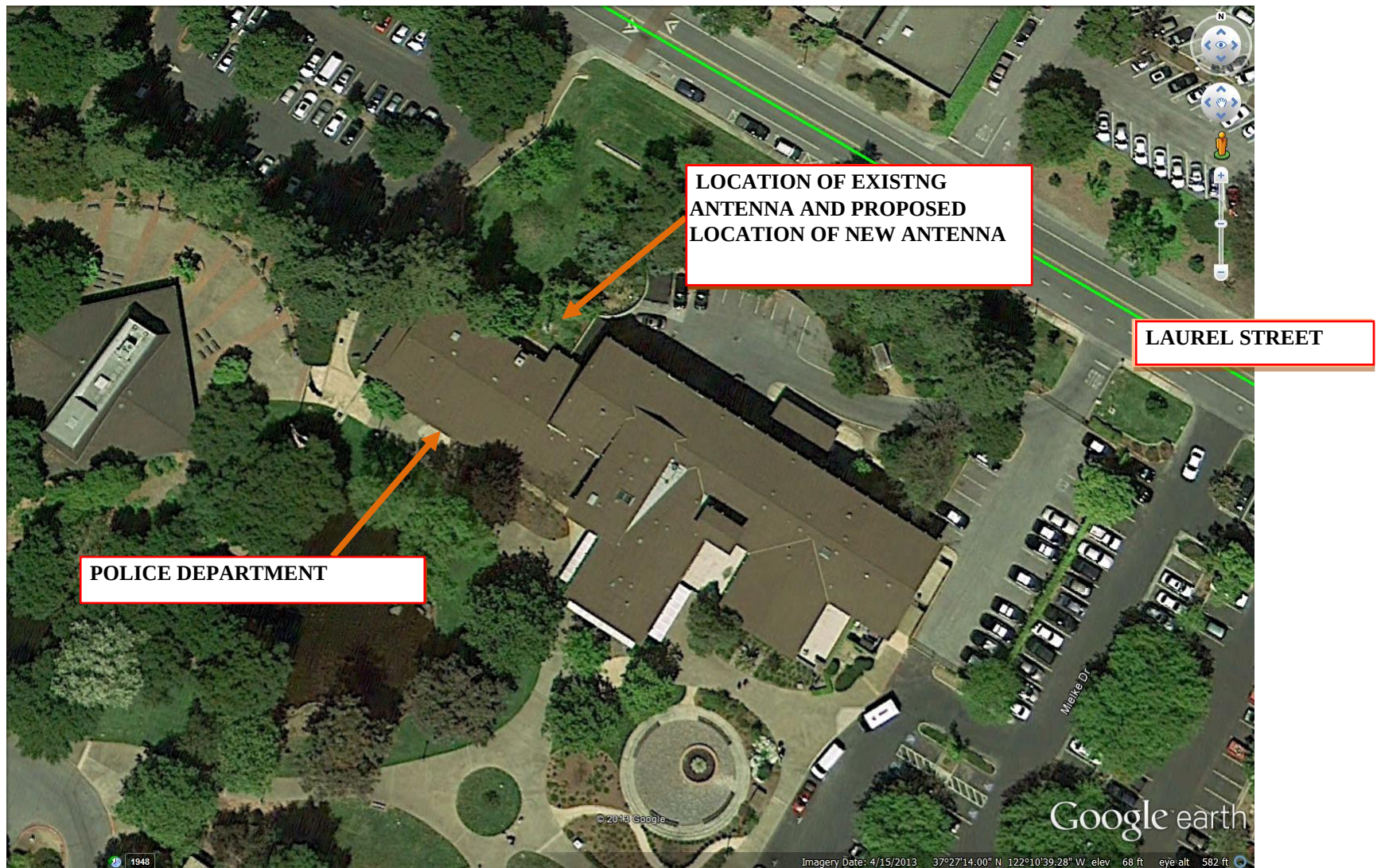


Figure 4: Aerial view of existing antenna location—(701 Laurel Street Menlo Park CA, 94025)

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View of Antenna Structure from Laurel St near Burgess Pool



Location for Proposed Monopole

VIEW OF PROPOSED MONOPOLE– FROM LOCATION #2



Location for Proposed Monopine Antenna

VIEW OF PROPOSED MONOPINE– FROM LOCATION #2

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View of Antenna Structure from Burgess Park



VIEW OF PROPOSED MONOPOLE ANTENNA – LOCATION #2



VIEW OF PROPOSED MONOPINE ANTENNA – LOCATION #3

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STAFF REPORT

City Council

Meeting Date:

10/20/2015

Staff Report Number:

15-152-CC

Regular Business:

Consideration of Approval of the Terms of an Agreement between the City of Menlo Park and the American Federation of State, County and Municipal Employees, Local 829

Recommendation

Approve the terms of a collective bargaining agreement between the City of Menlo Park and the American Federation of State, County and Municipal Employees, Local 829 (AFSCME), and authorize the City Manager to execute a Memorandum of Understanding (MOU) with a term of October 21, 2015 through June 30, 2017

Policy Issues

This recommendation aligns with the City's goals of balancing continued fiscal prudence in planning for potential impacts of employee retirement benefits, while also continuing to align the City as a competitive employer in the increasingly robust job market of the Silicon Valley.

Background

On May 19, 2014, in accordance with Council's Public Input and Outreach Regarding Labor Negotiations policy, a staff report was placed on the Council agenda providing an opportunity for public comment prior to the commencement of labor negotiations. The staff report provided a summary of background information related to labor negotiations, a summary of bargaining unit information, personnel cost information, and the methodology used to determine a competitive and appropriate compensation package. At that meeting, there was no public comment.

AFSCME represents 36.25 non-sworn supervisory/managerial employees throughout the City. The City's and AFSCME's negotiation teams commenced negotiations on May 19, 2015. The parties met approximately 7 times and reached a Tentative Agreement (TA) on September 09, 2015, for a successor MOU to the previous Agreement which expired June 30, 2015. AFSCME notified the City that the TA was ratified by the membership on September 29, 2015.

Analysis

A complete copy of the Tentative Agreement is attached. The Tentative Agreement is on a full MOU, between the City and AFSCME. The following is a summary of key provisions and/or changes from the previous MOU.

Key provisions and/or changes							
Term	October 21, 2015 (pending Council approval)- June 30, 2017						
Pay Rates	Effective the beginning of the first full pay period after ratification of this Agreement by the membership and approval by City Council, the pay rates for employees in this representation unit shall be increased by Three Percent (3%). Effective the first full pay period following ratification of this agreement, the City will pay each member of the bargaining unit a one-time lump sum non-pensionable bonus of one thousand dollars (\$1000.00). This sum shall be prorated for part-time employees along with those employees hired after July 01, 2015. There shall be a reopener on wages only and parties agree to commence these reopener negotiations on March 01, 2016. No "special" wage increases will be implemented during the term of this MOU without mutual agreement of the parties. If no mutual agreement is reached on or before June 01, 2016, an overall wage adjustment of Two Percent (2%) will be implemented the first full pay period after July 01, 2016, after which the obligation to bargain under this reopener shall cease.						
Uniforms	Effective July 01, 2016, the reimbursement for tools for the Fleet Supervisor in the Maintenance Division will increase to a maximum of one thousand four hundred dollars (\$1,400) per fiscal year.						
Medical Benefits	Effective the latter of January 01, 2016 or ratification of this agreement by the membership, City contribution towards premiums will increase by three percent (3%) at each level of health coverage. The amount shall be allocated to each employee according to the medical benefits plan selected as follows: <table> <tr> <td>\$2,148.00 per month</td><td>- family coverage</td></tr> <tr> <td>\$1,652.00 per month</td><td>- two-person coverage</td></tr> <tr> <td>\$826.0 per month</td><td>- single coverage</td></tr> </table> Effective January 01, 2017, the City contribution to member's recreation and childcare reimbursement shall be rolled into the medical benefits Flexible Spending Account (FSA) to be used for authorized medical related expenditures, and the reimbursement benefit shall cease. This change is made in order to comply with IRS rules and regulations.	\$2,148.00 per month	- family coverage	\$1,652.00 per month	- two-person coverage	\$826.0 per month	- single coverage
\$2,148.00 per month	- family coverage						
\$1,652.00 per month	- two-person coverage						
\$826.0 per month	- single coverage						

Vision	Effective the latter of January 01, 2016, or upon agreement with all employee groups, the City shall pay the full cost for fully insured Vision Insurance provided by VSP, or an equivalent insurance provider, providing vision benefits as described in the summary plan description.
Parental/Pregnancy and Maternity Leave	Effective with the ratification of this agreement, the three listed leaves shall be combined into one section titled "Maternity and Parental Leave" and shall state that all such leaves shall be granted and compensated in accordance with state and federal laws covering these topics, including the California Family Rights Act (CFRA).
Working Out of Classification	Effective with the ratification of this agreement, Department Directors or their designees must approve "working out of classification" assignments and these assignments shall only be made for a budgeted position.
Personal Business Leave	Effective with the ratification of this agreement, Personal Business Leave shall be incorporated into the Vacation Scheduling section.

Pursuant to Resolution 6177, adopted by City Council on December 10, 2013, if the above agreement is ratified by council, the same salary and benefits would apply to members in the "confidential" class of employees (Executive Secretary to the City Manager, Human Resources Analyst and Human Resources Assistant), as they are unrepresented by a labor group due to the nature of their assignments. The salary schedule for "confidential" employees can be found in Attachment E.

Impact on City Resources

This Tentative Agreement results in a budgetary impact to the City of approximately \$177,000 for the first year of the agreement, and approximately \$290,000 for the second year for a total of approximately \$467,000 for the term of the agreement.

Environmental Review

No environmental review is required.

Public Notice

Public Notification was achieved by posting the item 15 days prior to the Council meeting of October 20, 2015.

Attachments

- A. Tentative Agreement between the City and AFSCME Successor MOU
- B. Tentative Agreement between the City and AFSCME Successor MOU Appendix "A"
- C. Tentative Agreement between the City and AFSCME Successor MOU Appendix "B"
- D. Tentative Agreement between the City and AFSCME Successor MOU Appendix "C"

E. Confidential Employee Salary Schedule

Report prepared by:

Dave Bertini, Interim Human Resources Director

**CITY OF MENLO PARK
AND
AMERICAN FEDERATION OF STATE, COUNTY AND MUNICIPAL
EMPLOYEES, LOCAL 829
TENTATIVE AGREEMENT**

This Agreement is on an overall settlement on the terms of a successor Memorandum of Understanding between the City of Menlo Park ("City") and American Federation of State, County and Municipal Employees, Local 829 ("AFSCME").

This Agreement is considered tentative and shall not be considered final or binding until ratified by the AFSCME Membership and approved by City Council.

This document sets forth the full agreements of the parties reached during these negotiations. Anything that is not included in this Agreement is not part of the Tentative Agreement.

The parties understand that in the event either party rejects this Agreement, each party reserves the right to modify, amend and/or add proposals.

FOR CITY:

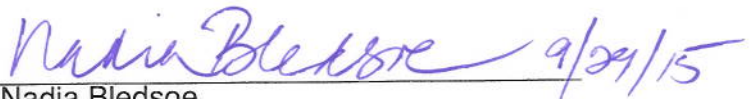


David Bertini
Date **SEP 29 2015**
Human Resources Director

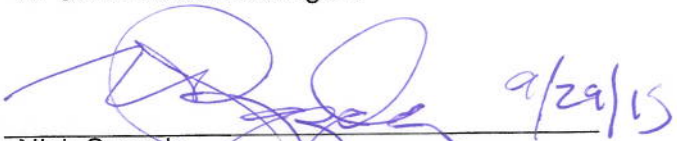


Charles Sakai
Date
Labor Consultant

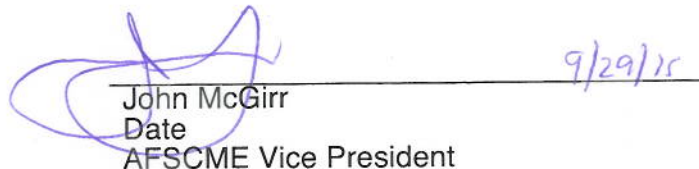
FOR AFSCME:



Nadia Bledsoe
Date
AFSCME Business Agent



Nick Szegda
Date
AFSCME President



John McGirr
Date
AFSCME Vice President

**CITY OF MENLO PARK
AND
AMERICAN FEDERATION OF STATE, COUNTY AND MUNICIPAL
EMPLOYEES, LOCAL 829
TENTATIVE AGREEMENT**

Term:

- Approximately 22 months (expiring June 30, 2017)

Pay Rates and Practices:

- Please see attached

Uniforms:

- Please see attached

Benefit Programs:

- Please see attached

Various language corrections/changes:

- Please see attached

Tentative Agreements:

- Working Out of Classification
- Holidays
- Vacation Scheduling
- Personal Business Leave
- Maternity Leave of Absence Without Pay
- Leave for Pregnancy Disability
- Parental Leave
- Education Leave and Tuition Reimbursement
- HSA

MEMORANDUM OF UNDERSTANDING
BETWEEN
AMERICAN FEDERATION OF
STATE, COUNTY, AND MUNICIPAL EMPLOYEES
LOCAL 829
AND
THE CITY OF MENLO PARK



December 11, 2013**TBD** through June 30, **2015****2017**

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APPENDIX D: LABOR MANAGEMENT COMMITTEE	

PREAMBLE

This Memorandum of Understanding is entered into by and between American Federation of State, County and Municipal Employees, AFL-CIO (hereinafter "Union") and the City of Menlo Park (hereinafter "City"). This Memorandum of Understanding is entered into pursuant to the Meyers-Milias-Brown Act (Government Code Sections 3500-3510) and has been jointly prepared by the parties.

ARTICLE 1: RECOGNITION

- 1.1 The Union is recognized as the exclusive representative of the classifications for City employees as listed in Appendix "A" to this Agreement. Nothing herein shall be construed to discriminate against any individual who chooses to exercise his/her right of self-representation under Section 3502 of the Government Code.
- 1.2 Each newly established job classification shall be assigned to an appropriate representation unit by the Human Resources Director, after consultation with recognized employee organizations, if they find that there is an appropriate unit to which such job classifications may be assigned. An employee organization may appeal in writing from such assignment to the Human Resources Director within thirty (30) calendar days of said determination. If the Union is unsatisfied with the results of said appeal, the Union may invoke impasse procedures in accordance with Government Code 3500. In general the City shall adhere to objectives which require that the appropriate unit shall be the broadest feasible grouping of positions that share an identifiable community of interests. Factors to be considered may include:
 - a. Similarity of the general kinds of work performed, types of qualifications required and the general working conditions.
 - b. History of representation in the City and similar employment.
 - c. Consistency with the organizational patterns of the City of Menlo Park.
 - d. Number of employees and classifications, and the effect on the administration of employer-employee relations created by the fragmentation of classifications and proliferation of units.
 - e. Effect on the classification structure and impact on the stability of employer-employee relationship of dividing single or related classifications among two or more units.

- 1.3 The following employees are not eligible for representation by this bargaining unit:
- 1.3.1 All sworn police and sworn police management classifications which are contained in other bargaining units;
 - 1.3.2 Members of the Management Team who are not subject to merit system employment procedures or protection;
 - 1.3.3 Independent contractors.

ARTICLE 2: UNION SECURITY

2.1 Agency Shop

Consistent with the provisions of the California Government Code, Section 3502.5, an employee covered by this agreement shall either: (1) become a member of the Union and pay regular Union dues, or (2) pay to the Union an agency (representation) fee as permitted by law, or (3) present to the Union and the City's Human Resources Director a written declaration that he or she is a member of a bona fide religion, body, or sect that has historically held conscientious objections to joining or financially supporting public employee organizations. An employee who qualifies for this exemption shall, in lieu of the agency fee payment, pay an amount equal to the agency fee to one of the following three (3) non-religious, non-labor, charitable organizations:

- Second Harvest Food Bank of Santa Clara and San Mateo Counties
- Boys & Girls Clubs of the Peninsula
- InnVision Shelter Network

An employee who claims such exemption must submit written proof of such charitable payment annually to the Union and the Human Resources Director. If the employee fails to provide such written proof, the employee will be required to pay the agency fee.

2.2 Fee Deduction

If any employee in a classification covered by this MOU fails to authorize one of the above deductions within thirty (30) calendar days of date of hire or within thirty (30) calendar days' notice of the provisions of this agency shop, the City shall deduct the agency fee from the employee's paycheck. The City shall determine the timing of such automatic deductions. The requirement that employees who are not members of the Union pay this representation agency fee shall remain in effect until the earlier of: (1) expiration of this Agreement; (2) termination of the Agency Shop clause by action of the bargaining unit; or (3) legislation invalidating the manner in which Agency Shop was adopted. In the event that employees in the representation unit vote to rescind Agency Shop, the provisions of Section 2.3 – Maintenance of Membership, shall apply to dues-paying members of the Union.

2.3 Maintenance of Membership

Any employee who becomes a member of AFSCME shall not revoke such authorization except during the thirty (30) calendar day period between ninety (90) calendar days and sixty (60) calendar days preceding the expiration of this Memorandum of Understanding.

Revocation during said period shall be by written, signed statement furnished to the City with a copy sent to the Union (by the City).

An employee who so withdraws from Union membership shall still be subject to the provisions of Agency Shop (Section 2.1 above).

An employee who is subsequently employed in a position outside of the AFSCME unit shall not be required to continue dues deduction.

2.4 Payroll Deduction

- 2.4.1 The Union may have the regular dues of its members within the representation unit deducted from employees' paychecks under procedures prescribed by the City for such deductions. Dues deductions shall be made only upon signed authorization from the employee upon a form furnished by AFSCME and distributed by the City, and shall continue until: (1) such authorization is revoked, in writing, by the employee pursuant to the provisions of this Section 2.4; or (2) the transfer of the employee out of the representation unit.
- 2.4.2 The Union shall notify the City at least thirty (30) days in advance of any change in its dues and fees.
- 2.4.3 Employees may authorize dues deductions only for the organization certified as the recognized employee organization of the unit to which the employees are assigned.
- 2.4.4 Employees may voluntarily elect to have contributions deducted from their paychecks under procedures prescribed by the District for the P.E.O.P.L.E. fund. Such deductions shall be made only upon signed authorization from the employee and shall continue until such authorization is revoked in writing.
- 2.4.5 If, after all other involuntary and insurance premium deductions are made in any pay period, the balance is not sufficient to pay the deduction of Union dues, agency fee, or charity fee required by this Section, no such deduction shall be made for the current pay period.

- 2.4.6 The provisions of Section 2.4.1 above shall not apply during periods that an employee is separated from the representation unit, but shall be reinstated upon the return of the employee to the representation unit. For the purpose of this section, the term separation includes transfer out of the representation unit, layoff, and leave of absence without pay.

2.5 Union Obligations

- 2.5.1 The Union shall provide the City with a copy of the Union's Hudson Procedure for the determination and protest of its agency fees. The Union shall provide a copy of said Hudson Procedure to every agency fee payor covered by this Memorandum of Understanding and annually thereafter, and as a condition to any percentage change in the agency fee.
- 2.5.2 The Union will supply the City with deduction authorization forms and/or membership applications as well as other informational materials it wishes to be distributed to new employees.
- 2.5.3 Annually, the Union shall provide the City with copies of the financial report which the Union annually files with the California Public Employee Relations Board, the United States Department of Labor (Form LM-2), or the Union's balance and operating statement for the prior year. Failure to file such a report within sixty (60) days after the end of its fiscal year shall result in the termination of all agency fee deductions without jeopardy to any employee, until such report is filed.
- 2.5.4 The Union shall refund to the City any amount paid to it in error upon presentation of supporting evidence.

2.6 City Obligations

- 2.6.1 Any new employees hired into positions covered by this Memorandum of Understanding shall be provided by the City and shall execute an "Employee Authorization for Payroll Deduction" form selecting one of the following: (1) Union dues; (2) agency fee; or (3) if he/she qualifies pursuant to the requirements of Section 2.1 above, a fee equal to agency fee payable to one of three (3) negotiated charities.
- 2.6.2 P.E.O.P.L.E. Checkoff. All employees who choose to do so may request an additional deduction from their paychecks to be forwarded to the Union and accounted for in a separate notation. Such additional deduction shall be used for political campaign purposes and shall be totally voluntary.
- 2.6.3 All transmittal checks shall be accompanied by documentation which denotes the employee's name, employee ID number, amount of deduction and member or fee payor status.

2.6.4 The City shall hand out agreed upon Union materials along with Agency Shop forms.

2.7 Hold Harmless

The Union shall indemnify, defend, and hold the City harmless against any and all claims, demands, suits, orders, or judgments, or other forms of liability that arise out of or by reason of this Union Security section, or any action taken or not taken by the City under this Section 2. This includes, but is not limited to, the City Attorney's fees and costs.

2.8 Upon request from the Union, but not more than once every six (6) months, the City shall supply the Union with a list of the names, addresses, and classifications of all unit employees except those who file written notice with the Human Resources Department objecting to release of addresses, in which case information will be transmitted without address. Once a month, the City shall supply the Union with a list of representation unit new hires and separations which occurred during the previous month. Additionally, once a month the City shall supply to the Union a list, generated by the City, that includes all represented employees, their Department, division and an indication of their membership status.

2.9 Except in cases of emergency, the Union shall be informed sufficiently in advance in writing by Management before any proposed changes not covered by this Memorandum of Understanding are made in benefits, working conditions, or other terms and conditions of employment which require the meet and confer or meet and consult process.

ARTICLE 3: REPRESENTATION

3.1 It is agreed that, as long as there is no disruption of work, three (3) Union representatives shall be allowed reasonable release time away from their work duties, without loss of pay, to act in representing a unit employee or employees on grievances or matters requiring representation before the City or similar agencies. The Union shall designate the three (3) representatives under this section. Only one (1) representative shall be entitled to release time under this section for any one (1) grievance or group of related grievances. Release time shall be granted for the following types of activities:

3.1.1 A meeting of the representative and an employee or employees in the unit related to a grievance.

3.1.2 A meeting with Management.

3.2 The Union agrees that the representative shall give advance notification to his/her supervisor before leaving the work location except in those cases involving emergencies where advance notice cannot be given. Release time is subject to the legitimate scheduling needs of the department.

- 3.3 Three (3) Union representatives who are City employees shall be allowed a reasonable amount of time off without loss of pay for formal negotiation purposes. Preparation time for negotiations shall not be on release time without approval of the Human Resources Director.
- 3.4 Three (3) representatives shall be allocated up to two (2) hours time off every other month without loss of pay for purposes of meeting and consulting on matters within the scope of representation, other than formal negotiations.

ARTICLE 4: DEFINITIONS

4.1 Definitions

- 4.1.1 A “temporary” or “contract” employee is an employee employed for a definite term of up to six months, although such temporary employee may be held over for up to three (3) additional months when the temporary employee is filling a vacancy created by leave without pay and the leave is extended beyond the initial fixed period.
- 4.1.2 A “provisional” employee is an employee employed for a definite term of more than six (6) months, although such provisional employee may be held over beyond the initial term of employment as specified in Section 12.4.1. A provisional employee shall be employed and treated in all respects for the entire term of employment as a provisional employee, the same as a probationary employee-
- 4.1.3 A “probationary” employee is an employee who has not yet completed the probationary period, or any extension(s) thereof, as provided in this Agreement. A probationary employee is eligible for benefits provided in this Agreement, except as limited by Sections 6.1.5 and 6.1.8 of this Agreement.
- 4.1.4 A “permanent” employee is an employee who has satisfactorily completed the probationary period, or any extension(s) thereof. A permanent employee is eligible for benefits provided in this Agreement.

ARTICLE 5: LAYOFF AND RE-EMPLOYMENT

5.1 Layoff

- 5.1.1 Whenever in the judgment of the City Council it becomes necessary in the interests of economy or because the position no longer exists, the City Council may abolish any position or employment in the competitive service, or may reduce the hours of any position. The decision to abolish a position or reduce the hours of any position shall not be subject to the grievance procedure contained in this Agreement.
- 5.1.2 It is agreed between the parties that attrition is the preferred method of accomplishing any necessary reduction in the work force.
- 5.1.3 If a permanent reduction of hours is proposed for a particular classified position, the incumbent has the right to exercise any and all of the rights set forth in this Article. The incumbent may also choose to be laid off and receive the benefits contained in this Article.

5.2 Notification of Layoff

- 5.2.1 Employees being laid off shall be given written notice from the City's Human Resources Department at least forty-five (45) calendar days prior to the effective dates of layoff. The layoff notice shall contain a statement of the effective date of layoff, a statement of "bumping rights" including the specific positions into which the employee may bump, and a statement of re-employment rights. Notice of layoff shall be given by personal service and the employee shall sign an acknowledgment of personal service; or by certified mail, return receipt, postage prepaid. The Union shall receive concurrent notice of individual layoff notices.
- 5.2.2 The Union shall be afforded an opportunity to meet with the City to discuss the circumstances requiring the layoff and any proposed alternatives.

5.3 Seniority

- 5.3.1 For the limited purposes of this Article 5, "length of service" means all hours in paid status including holiday, vacation, and paid leave, but does not include any hours compensated for overtime or standby, military leave, unpaid illness, unpaid industrial accident leave, or hours served as a temporary or contract employee in classifications other than the classification in which the employee is being laid off.
- 5.3.2 In the event an employee reverts to a previously held classification, seniority shall include all time accrued previously in the lower classification, as well as all time accrued in the higher classification.

- 5.3.3 No seniority credit shall be earned during periods of separation from service with the City, including suspension without pay as a result of disciplinary action.

5.4 Order of Layoff

- 5.4.1 All temporary employees in a particular classification will be laid off before any provisional, probationary or permanent employee in the classification.
- 5.4.2 All provisional employees in a particular classification will be laid off before any probationary or permanent employee in the classification.
- 5.4.3 All probationary employees in a particular classification will be laid off before any permanent employee in the classification.

| 5.5 Layoff Procedures

Except as otherwise provided, layoffs will be made in reverse order of seniority. The employees with the least time served in a classification shall be laid off first, with ensuing layoffs occurring in reverse order of length of service in the classification. If two employees have served the same time in the classification, then as between those two employees, the layoff will be based on total time of service with the City. If total time of service with the City is the same, then, as between those two employees, the layoff will be determined by a lottery.

5.6 Bumping Rights

- 5.6.1 A permanent employee who is designated for layoff, including an employee on probation following reclassification, transfer, or promotion from a permanent position, may elect, in lieu of layoff, to be reassigned to a position in a lateral or lower related classification within his/her department, or another department, provided that in order to displace the employee with less service the laid off employee must have held permanent status in the classification into which he/she is bumping.
- 5.6.2 When a senior employee chooses to bump into a position in a lateral or lower, related classification, said employee must accept the salary, hours, and working conditions of the position to which return is requested.
- 5.6.3 A bargaining unit employee requesting to bump into a classification as provided herein, must make such request to the Human Resources Director in writing within seven (7) calendar days of his/her receipt of written notice of layoff. Failure to comply with the deadline provided herein shall be deemed a waiver of the bumping rights provided in this Section 5.6.
- 5.6.4 Nothing herein shall preclude bumping between bargaining units.

5.7 Re-employment

- 5.7.1 The names of employees laid off shall be placed on a re-employment list in inverse order of seniority for a period of two (2) years from the date of layoff. The employee with the greatest seniority on the re-employment list shall be offered reinstatement when a vacancy occurs in a classification in which the employee held permanent status.
- 5.7.2 A laid off employee may refuse an offer of re-employment to a position for which he/she is qualified, however, refusal of two (2) offers of re-employment to the classification from which laid off shall automatically cause removal of the employee's name from the re-employment list and loss of any re-employment rights.
- 5.7.3 Any employee who accepts an offer of re-employment shall have his/her name removed from the re-employment list.
- 5.7.4 An employee who has been laid off and has been placed on a re-employment list shall be eligible, during the time the employee is on the re-employment list, to take promotional exams.
- 5.7.5 Offers of re-employment shall be made via the U.S. Mail Service, Certified Return Receipt, and shall include the specific position and/or hours being offered, the rate of pay, level of benefits, a current job description, a mechanism for acceptance or refusal of the offer of re-employment within the prescribed time limit, and a place for the laid off employee's signature. Failure to respond within ten (10) days from the date of service of offer of re-employment shall be deemed a refusal of that offer of re-employment.

The Union shall receive concurrent notice of each re-employment offer. Date of service is defined as the date marked on the certified mail return card, or the date the notice is returned by the postal service as undeliverable.

5.8 Miscellaneous Provisions

- 5.8.1 For the limited purpose of Article 5, permanent employees, including employees on probation following reclassification, re-employment, reinstatement, transfer, promotion, or demotion from a permanent position who are laid off shall be entitled to one (1) month severance pay and three (3) months of paid health insurance.
- 5.8.2 Employees appointed from a re-employment eligibility list shall have all rights accrued at the time of layoff restored including accrued sick leave, rate of vacation accrual and seniority, but excluding benefits to the extent

compensation has been received prior to re-employment. Severance pay, if any, shall not be repaid.

ARTICLE 6: PERSONNEL ACTIONS

6.1 Probation

- 6.1.1 The probationary period shall be regarded as part of the testing process and shall be utilized for closely observing the employee's work, for securing the most effective adjustment of a new employee to a prospective position, and for rejecting any probationary employee whose performance is not satisfactory.
- 6.1.2 During the seventh pay period following employment, the employee shall receive a performance evaluation. Human Resources shall send a reminder notice of this deadline to the appropriate supervisor, with copies to the employee and City Manager.
- 6.1.3 All original and promotional appointments shall be subject to a probationary period of six (6) months for unit members. The Human Resources Director may, based upon the recommendation of the employee's supervisor, extend the probationary period not to exceed six (6) months if the employee marginally performed the necessary job functions and needs an additional six (6) months to bring performance to a satisfactory level. Total absences lasting four (4) weeks or more shall extend the review period by the corresponding duration of the absence.
- 6.1.4 At least one month prior to permanent appointment the City shall begin to review the work of the probationary employee to determine the following:
 - a. certify him/her for the position;
or
 - b. extend the probation;
or
 - c. reject him/her for the position.

The City shall take action on this determination by the last day of the probation period by notifying the employee in writing. If the notification is delayed by more than five working days following the last day of probation, the employee shall become permanent.

- 6.1.5 If the service of a probationary employee is unsatisfactory, the employee will be notified in writing that he/she has been rejected for the permanent position. Said notice shall contain the reasons for rejection. The Human Resources Director shall, upon request, afford an interview in a timely fashion to the terminated employee for discussion of the reasons for termination. The employee may, upon request, be accompanied by a Union representative. The interview shall not be deemed a hearing nor shall it obligate the City to reconsider or alter the termination action.
- 6.1.6 An employee deemed unsatisfactory for a position shall return to his/her prior classification and non-probationary status in that classification and to the pay step he/she would have had if not promoted, transferred or voluntarily demoted.
- 6.1.7 Departments may not shift job assignments as a reason in itself for placing an employee on probationary status.
- 6.1.8 The parties agree that probationary employees shall have the same rights as other employees under this Memorandum of Understanding, including full and complete access to the grievance procedure, except that employees who do not hold prior permanent status with the City shall have no right to review any disciplinary action or decision to unfavorably terminate the probation.
- Employees who do hold prior permanent status shall have the right to appeal any disciplinary action, but not the decision to unfavorably terminate the probation.
- 6.1.9 A probationary period begins on the first day of work when the employee is selected to fill a permanent position.

6.2 Performance Evaluation

- 6.2.1 The City may, from time to time, develop reasonable guidelines that enable the supervisor to adequately evaluate the employee as to satisfactory job performance. Job performance reviews shall be conducted pursuant to regularly established and announced policies. The guidelines shall be in accordance with the job specifications for the position being reviewed.
- 6.2.2 During the term of this MOU, the Union and the City agree to meet and confer over the creation of a pay-for-performance system.

6.2.3 Performance evaluations are not appealable through the grievance procedure but, in the event of disagreement over content, the employee may request a review of the evaluation with the next higher level of Management, in consultation with the Human Resources Director. For purposes of this review, the employee may be represented by the Union. Decisions regarding evaluation appeal shall be made in writing within ten (10) working days following the meeting.

6.3 Performance Improvement Plans

When the performance of an employee falls below the minimum standards established for a position, a performance improvement plan may be developed. The employee has the right to have a Union representative present during the development of the performance improvement plan. Performance improvement plans must describe in detail the areas of deficiency, and contain a reasonable plan for improvement.

When used, Performance Improvement Plans shall be an integral extension of the job performance review process, and shall not be used, by themselves, for disciplinary actions.

6.4 Personnel Files

6.4.1 The Human Resources Department shall maintain personnel records for each employee in the service of the City showing the name, title of position held, the department to which assigned, salary, changes in employment status, attendance records and such other information as may be considered pertinent. An employee is entitled to review his/her personnel file upon written request or may authorize, in writing, review by his/her Union representatives, with the exception of information obtained confidentially in response to reference inquiries. Upon written request by the employee, an employee or the Union shall be allowed copies of materials in an employee's personnel file relating to a grievance.

6.4.2 The City shall notify an employee and an authorized representative of the Union of any adverse material placed in an employee's personnel file if that material is or has not previously been reviewed with the employee. The employee shall have a reasonable time and opportunity to comment thereon.

6.4.3 In any disciplinary action the City may not rely upon any previous written warnings, notice of suspension or demotion, or written evaluation not contained in said file as justification for any personnel action which adversely affects the employee in question, but may rely on oral warnings not made a part of the file and issued within the preceding six (6) months. In the event an employee who has received written warnings or reprimands has completed twenty-four (24) months of work without further disciplinary action, his/her prior disciplinary record of similar instances, except for sustained findings of violations of the City's Anti-Harassment

and Non-Discrimination policy, shall no longer be relied upon in any determination which in any manner affects his/her employment status and shall be removed from the employee's personnel file upon request from the employee. In cases where an employee is suspended or demoted and such discipline is sustained, a record of such action shall be kept in the personnel file and any such documentation supporting such action shall be kept in a separate file in the Human Resources Department.

- 6.4.4 Personnel files of individual employees are confidential information and shall be used or exhibited only for administrative purposes or in connection with official proceedings before the City Council. The City will only release information to creditors or other persons upon proper identification of the inquirer and acceptable reasons for the inquiry. Information then given from personnel files is limited to verification of employment, length of employment and verification and disclosure of salary range information. Release of more specific information may be authorized in writing.

6.5 Promotional Opportunities

- 6.5.1 Promotional opportunities for classifications within the representation unit will be posted for at least ten (10) working days (Monday through Friday) prior to closing applications. Such postings shall include a description of the type of examination and screening process that will be used in filling the position. Any test given shall relate to the skills, knowledge, and abilities necessary to perform the job. Where an interview panel is used as part of the examination process, at least one member of that panel shall, whenever feasible, be a person who is not employed by the City, but is employed by a different municipality performing or supervising similar duties and responsibilities..
- 6.5.2 Members of the bargaining unit who are permanent employees applying for promotional opportunities and who meet the minimum qualifications for the position will be considered and interviewed.
- 6.5.3 In the event a temporary employee is appointed to the position being temporarily occupied for 2,080 hours or more, the total hours worked prior to the date of appointment shall be totaled and divided by the permanent hours per week, and the seniority adjusted to reflect the time served as a temporary employee. The adjusted seniority will be recognized for purposes of seniority, vacation, and salary advancements.

6.6 Reclassification

- 6.6.1 During the term of this Agreement, the City shall notify the employee concerned in case of contemplated change in job content as contained in the classification descriptions which were in effect at the beginning of the

Agreement. The Union shall be notified in advance of any contemplated changes in classification descriptions and such changes shall be discussed with the Union, provided that the City shall have the final decision regarding job content. The Union shall be given a reasonable opportunity to meet and confer on the impact of any such changes on matters within the scope of representation.

- 6.6.2 Once each year, during the month of January, an employee may request in writing a re-evaluation of his/her job based on significant changes in job content or significant discrepancies between job content and the classification description. The request must contain justification. A statement by Management that a job re-evaluation request will be submitted with the departmental budget does not relieve an employee from the responsibility of submitting his/her own request in a timely manner. If meetings are held, the employee may request representation by the Union. The City will process the request and issue a recommendation within ninety (90) days. The City shall not agree to a change in the appropriate pay level for a job description until the Union has received a copy of the proposed change and has been given the opportunity to meet and confer with the City. Reclassifications shall become effective the first pay period of the fiscal year.

If the employee receives a favorable recommendation for reclassification prior to the first pay period of the fiscal year, he or she will receive pay for working out of classification under Section 7.8.

During the term of this Agreement, the Union shall coordinate submission of job re-evaluation requests.

- 6.6.3 In conducting classification studies, the compensation figure calculated for each City shall consist of the following components: base salary, employer paid employee contributions to the retirement system, and deferred compensation contributions made by the employer on behalf of the employee.
- 6.6.4 The reclassification procedure shall not be used for the purpose of avoiding use of the promotion or demotion procedures.

6.7 Recruitment

In cases where an employee has vacated an authorized position within the unit, the City shall endeavor to begin the recruitment process within thirty (30) working days.

6.8 Re-employment – Voluntary Separation

Any employee who voluntarily terminates employment and is rehired within twelve months of the date of separation from the City shall have their accrual rates adjusted to the levels achieved prior to separation, except that the time in which the employee was not employed by the City shall not be counted. In addition, all leave balances not paid out upon separation shall be restored to the levels appearing on City records as of the date of separation, except for floating holiday which will not be restored for the remainder of the calendar year in which the separation occurred.

For all other purposes, the time in which the employee was not employed by the City will be treated in the same manner as an unpaid leave of absence.

Re-employment of any employee within the twelve (12) month period is at the sole discretion of the City. If the City decides not to re-employ the former employee, the decision of the City shall be final and not be subject to appeal or to the grievance procedure.

ARTICLE 7: PAY RATES AND PRACTICES

7.1 Overall wage adjustment

7.1.1 Effective the beginning of the first full pay period after ratification of this Agreement by the membership and approval by City Council, the pay rates for employees in this representation unit shall be increased by ~~Three Four~~ and One Half Percent (3%)(4.50%). The pay rates for employees in the representation unit shall be as set forth in Appendix “B” to this Agreement.

7.1.2 The City and AFSCME agree to reopen this MOU on March 1, 2016, on the single issue of wage increases. No special wage increases will be implemented during the term of this agreement without mutual agreement between the City and AFSCME. If no mutual agreement is reached on or before June 1, 2016, an overall wage adjustment of 2.0% will be implemented the first full pay period after July 1, 2016, after which the obligation to bargain under this reopener provision shall cease.

7.1.3 Effective the first full pay period following ratification of this Agreement by the membership and approval by City Council, the City will pay each member of the bargaining unit a one-time lump sum non-pensionable bonus of \$1,000. This amount shall be prorated for part time employees and employees hired after July 1, 2015.
[Example # 1, if the first full pay period following adoption by City Council begins November 1, 2015, an employee hired on August 1 would receive 75% of the bonus (3/4 of \$1,000).]
[Example # 2, Employee B is a part-time employee with a 50%appointment. Employee B would be entitled to a \$500 bonus.] ~~Sixty~~

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~~(60) days prior to the expiration of the MOU, the City shall conduct a salary survey of four (4) comparable mid-management classifications in different pay ranges and shall utilize the fourteen (14) traditional comparison cities. The Union and City shall meet in advance to discuss which classifications shall be compared. The results of the survey shall be considered during contract negotiations.~~

7.2 Step Increases

Merit advances from the first salary step to the second salary step shall be granted at six (6) month intervals and between second and subsequent steps at one (1) year intervals if the affected employee has demonstrated continued competent service. Employees who are hired in at Steps B, C or D, or are promoted and placed at Steps B, C or D will be eligible for their next step increase in six (6) months. For the purpose of determining step time requirements, time will commence on the first day of the month coinciding with or following entrance onto a salary step. Step increases shall be effective on the first day of the payroll period in which the time requirements have been met.

During the term of this Agreement, the parties agree to discuss, in an informal manner, alternatives to the merit pay system and related step increases, which may include exploration of various pay for performance systems, as well as ways in which to recognize certificates, advanced degrees and other career achievements. Such discussions may lead to an alternative pay system that would be implemented in lieu of the current system detailed in Sections 7.2 and 7.3 of this Memorandum of Understanding. If both parties agree to such a system during the term of this agreement, the change shall be documented by side letter with the intent of including it in subsequent contracts. Nothing in this section shall commit either party to making a change to the current system during the contract term.

7.3 Application of Rates

- 7.3.1 Employees occupying a position in the competitive service shall be paid a salary or wage within the range established for that position's class under the pay plan as provided. The minimum rate for the class shall normally apply to beginning employees. However, subject to the approval of the Human Resources Director, the department head may hire beginning employees who are especially qualified by their training or by their previous experience at any step in the range.
- 7.3.2 In the event that a newly hired employee is placed above Step A on the salary schedule due to recruitment problems, as opposed to the conditions in 7.3.1 above, incumbents in that classification who have been placed on a lower step of the salary schedule will be moved to the same step on the salary schedule as the newly hired employee, and all such employees will be allowed to move to the next step in six months.

7.4 Effect of Promotion, Demotion or Transfer on Salaries

7.4.1 Promotion

Upon promotion, the employee shall be placed on the first step in the new salary range, or on the step which provides for a minimum five percent (5%) increase in salary, whichever is greater, not to exceed the top step of the new range.

7.4.2 Demotion

Upon demotion of an employee with permanent status in his/her current class, his/her salary shall be adjusted to the highest step in the new class not exceeding the salary received in the former class.

7.4.3 Transfer

Upon transfer, the salary shall remain unchanged.

7.5 Bilingual Differential

7.5.1 Employees who are assigned to job duties requiring bilingual skills are eligible to receive Sixty-Five Dollars (\$65.00) each pay period for the use of bilingual skills in job duties arising during the normal course of work.

7.5.2 Eligibility for the bilingual pay differential shall be determined by the Human Resources Director on the basis of a proficiency test determined by the City.

7.5.3 Bilingual skills shall not be a condition of employment except for employees who are hired specifically with that requirement. If an employee is hired under this provision, that requirement shall be included in the initial appointment letter.

7.5.4 The City retains the right to discontinue the bilingual differential for any individual employee when bilingual services are no longer required, provided the City gives the Union ten (10) days notice prior to such revocation, in order to allow the opportunity for the parties to meet and consult.

7.5.5 No employee shall be required to use bilingual skills who is not compensated under this section.

7.6 Call Back Pay

7.6.1 Any employee who is required by the City to work on a day when the employee has not been scheduled, or any employee called back to work

after the completion of a regular work day for that employee, shall be entitled to a minimum of two (2) hours of compensation at one and one-half times their regular rate of pay.

- 7.6.2 Payment for call back may be at the cash rate specified in Section 7.6.1 above or in compensatory time off at the rate of one and one-half hours for each hour worked, at the employee's option. Prior to the end of the pay period, the employee shall designate, on the appropriate City form, his/her choice of either compensation at one and one-half times their regular rate of pay or compensatory time off.

7.7 Standby Pay

7.7.1 An employee performing standby duty outside the employee's regular work shift shall be compensated at the rate of Three Dollars and Seventy-Five Cents (\$3.75) ~~Three Dollars Ten Cents (\$3.10)~~ per hour for each hour the employee is assigned to standby duty.

~~7.7.2 Effective the beginning of the first full pay period after ratification of this agreement by the membership and approval by City Council, an employee performing standby duty outside the employee's regular work shift shall be compensated at the rate of Three Dollars and Seventy Five Cents (\$3.75) per hour for each hour the employee is assigned to standby duty.~~

7.8 Working Out of Classification

7.8.1 The term "working out of classification" is defined as a Management authorized assignment to perform work on a temporary basis wherein significant duties are performed by an employee holding a classification within a lower compensation range. ~~The employer shall notify employees in advance of making such assignments. The appropriate Department Director or Designee must approve assignments of Working out of Classification in writing and on a City-authorized form.~~

The employee must be working in a budgeted position (i.e., the position must be vacant or the incumbent must be on a long term leave of absence and/or vacation). Pay for working out of classification shall be as follows:

7.8.1.1 An employee performing duties associated with a higher position, ~~whether filled or unfilled~~, on an out of classification basis will receive acting pay of five percent (5%) for the hours worked in that capacity.

When the Department Head anticipates that the out of classification assignment will be for a period of 240 hours or more, the employee will receive the pay rate of the higher classification beginning with the start of the assignment. If such a determination has not been made by the end of the 240 cumulative hours worked in the higher classification, the employee shall receive the pay rate of the higher classification.

7.8.2 Out of classification provisions do not apply to work assignments performed in connection with declared conditions of public peril and/or disaster.

7.9 Night and Weekend Differential

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7.9.1 Employees in the Library assigned to work hours between 5:00 P.M. and 8:00 A.M. weekdays or between Friday from 5:00 P.M. to Monday 8:00 A.M. shall be compensated for night and weekend differential at five percent (5%) above the employee's base pay.

7.9.2 The Technical Services Manager assigned swing, midnight, relief or day shift on the weekend shall be compensated for night and weekend differential at five percent (5%) above the employee's base pay. Overtime hours shall not be used to qualify for weekend or night shift differential.

7.10 Court Appearances

Employees required to appear in Court during off-duty hours to testify regarding matters arising out of the employee's employment with the City, shall receive a minimum of four (4) hours pay at time and one-half (1.5). The City reserves the right to require the employee to wait to testify at their work location and perform duties as assigned while waiting to testify, provided the Court consents. If the Court requirement expires prior to the expiration of the four (4) hour minimum, the employee shall be released.

This section does not apply in situations where the employee is held over after or called in prior to his or her regular shift as long as the period is adjacent to the normal work shift. In these situations, standard overtime provisions shall apply.

ARTICLE 8: HOURS AND OVERTIME

8.1 Hours of Work

8.1.1 Regular Work Schedules

- a. The regular work schedule for all employees except those on a flexible schedule such as a 4/10, 9/80 or 12 hour schedule, shall consist of forty (40) hours within a seven (7) day work week and is five (5) consecutive days served in units of eight (8) hours. For this schedule, the workweek begins Sunday midnight and ends Saturday at 11:59 P.M.
- b. A 4/10 work schedule shall be four (4) days served in units of ten (10) hours within a seven (7) day work week. For this schedule, the workweek begins Sunday midnight and ends Saturday at 11:59 P.M.
- c. A 9/80 work schedule shall be nine (9) days served in one (1) unit of eight (8) hours and eight (8) units of nine (9) hours over a two week pay period. For this schedule, the workweek shall begin exactly four (4) hours after the start time of the day of the week which is each employee's regular alternate day off.

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- 8.1.2 Part-time Employees. Employees who work less than the regular week and day as set forth above shall be designated as part-time and shall have hours scheduled by the appropriate supervisor and approved by the City's Human Resources Director.
- 8.1.3 Lunch Periods. All employees working a work shift of six (6) hours or more, shall observe an unpaid lunch period of not less than thirty (30) minutes nor more than sixty (60) minutes. Lunch periods shall be scheduled with the approval of the department head.
- 8.1.4 Rest Periods. One (1) fifteen (15) minute rest break with pay shall be provided to unit members for each four (4) hours of service. Rest periods and lunch periods may not be aggregated and used to extend the lunch period or shorten the work day as part of a regular schedule.

8.2 Overtime

- 8.2.1 Definition.
 - a. Overtime for employees is defined as any time worked in excess of forty (40) paid hours in any seven day work week.

Overtime shall be compensated pursuant to Section 8.2.3. All overtime must be authorized and approved in advance by the Department Head.
- 8.2.2 Modified Schedules. At the request of either the employee or Department Head, the Department Head may approve a schedule of more than eight (8) hours per day without overtime compensation. Employees shall not be assigned irregular hours to avoid overtime.-Such a work schedule must be consistent with the regular work schedules defined in Section 8.1.1.
- 8.2.3 Overtime. Overtime may be assigned on a required basis or requested by the employee and approved by the Department Head. Overtime shall be compensated at the rate of one and one-half (1.5) times the employee's regular rate of pay or in the form of compensatory time at the rate of one and one-half (1.5) hours for each hour worked, at the employee's option except when the employee's choice of compensatory time would interfere with a department's ability to recover the cost of the overtime.
- 8.2.4 Compensatory Time. An employee may accumulate a maximum of one hundred sixty (160) hours of compensatory time. Compensatory time may be used when the services of an employee are not needed for the efficient functioning of his/her department, and must be approved in advance by the Department Head. Once an employee has reached the limits of compensatory time in this section he/she shall receive cash at the overtime rate for all overtime worked.

Upon termination, all unused compensatory time shall be paid off at the final rate of pay received by the employee or the average regular rate received during the last three (3) years of the employee's employment, whichever is higher.

8.3 Work Schedule

All work schedule and flexible time work schedule arrangements presently in effect shall continue. If the City proposes to change the work schedule of a classification the Union shall be notified at least fifteen (15) working days in advance and given an opportunity to meet and consult over such proposed changes prior to implementation.

ARTICLE 9: UNIFORMS

9.1 The City will provide uniforms, raingear, coveralls or shop coats when necessary for all Public Works, Engineering, and applicable Building and Planning Department employees, consistent with existing practice.

9.2 Technical Services Manager(s) shall upon initial appointment be provided required uniforms as determined by the Chief of Police, and thereafter receive Six Hundred Dollars (\$600.00) per year uniform allowance. ~~As soon as practicable, payment shall be made~~ in the amount of \$23.077 per biweekly pay period. If an eligible employee is on unpaid leave for a period of one (1) full pay period or more, the employee will not receive uniform allowance pay for that period.

The City will provide uniform jackets for City Service Employees whose work is primarily outdoors. Jackets that are worn or damaged in the course of work will be routinely replaced by the City. It will be the employee's obligation to replace lost or misplaced jackets.

If any other employee is required to wear a uniform during the life of this Memorandum of Understanding, the City will meet and confer with the Union concerning the establishment of an equitable uniform allowance.

9.3 On presentation of appropriate receipts, the City shall reimburse employees who are required by the City to wear safety shoes/boots for up to Two Hundred Eighty-Five Dollars (\$285.00) toward the cost of no more than three (3) pairs of OSHA approved safety shoes/boots per year. Employees in the Public Works Department assigned to the tree crew shall be reimbursed for up to Three Hundred Forty Dollars (\$340.00) toward the cost of no more than three (3) pairs of OSHA approved safety shoes/boots per year. Shoe repair and resoling are reimbursable under this provision. Shoes/boots purchased under this provision are for the use of the employee exclusively.

9.4 Employee clothing seriously damaged or destroyed in conjunction with employment duties will be reasonably replaced by the City.

- 9.5 The City shall reimburse the Fleet Supervisor in the Maintenance Division who, as a condition of employment, is required to provide his or her own tools and equipment. Reimbursement will be made for tools that the employee selects to purchase, or for tools required to be added to the inventory in order to carry out his or her duties. Reimbursement will be made on submission of receipts, but no more than twice per fiscal year. The City shall reimburse a maximum of one thousand dollars (\$1,000.00) per fiscal year. The reimbursement shall be administered in accordance with Maintenance Division policy. Effective July 1, 2016, the City shall reimburse a maximum of one thousand four hundred dollars (\$1,400) per fiscal year.

ARTICLE 10: HOLIDAYS

10.1 Fixed Holidays

Except as otherwise provided, employees within the representation unit shall have the following fixed holidays with pay:

New Year's Day	January 1
Martin Luther King Day	Third Monday in January
Washington's Birthday	Third Monday in February
Memorial Day	Last Monday in May
Independence Day	July 4
Labor Day	First Monday in September
Veterans Day	November 11
Thanksgiving	Fourth Thursday in November
Day after Thanksgiving	Fourth Friday in November
Christmas Eve	December 24
Christmas Day	December 25

- 10.1.1 In the event that any of the aforementioned days, except December 24, falls on a Sunday, the following Monday shall be considered a holiday. In the event that any of the aforementioned days falls on a Saturday, the preceding Friday shall be considered a holiday. In the event that December 24 falls on a Sunday, then the preceding Friday shall be considered a holiday.

- 10.1.2 Pay for Fixed Holidays. All full-time employees shall be paid a full day's eight (8) hours pay at their regular straight time base hourly rate for all fixed holidays as defined herein. All part-time workers shall be entitled to holiday leave with pay for the number of hours each holiday based on the number of hours per week such part-time worker is indefinitely assigned to work in the employee's regularly scheduled part-time position.

- 10.1.3 Work on Fixed Holidays. Any employee required to work on a fixed holiday and in addition to ~~regular hours~~ holiday pay shall be ~~paid~~

~~compensated at~~ time and one-half for such work ~~in addition to his/her holiday pay.~~ Work on a fixed holiday beyond the number of hours in ~~the~~ regular shift being worked on the holiday shall be compensated at double time.

10.1.4 An employee who is scheduled to work on a designated City holiday, and subsequently calls in sick, the employee shall not receive holiday pay.

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10.2 Floating Holiday Time

Employees shall annually receive thirty (30) floating holiday hours off with pay, credited on the first pay period of the year. Employees hired after the first pay period of the year shall receive a pro-rated amount of floating holiday hours for the remainder of the calendar year.

The following conditions will apply to such floating days off:

- 10.2.1 Employees shall request a floating day off in accordance with normal vacation time off request procedure. In cases of conflicting requests for the same day made at the same time, length of service shall govern who receives the day off.
- 10.2.2 Floating days off must be used during or prior to the end of the twenty-sixth (26) pay period of the year in which it was credited or be forfeited.
- 10.2.3 If an employee fails to take a day off as scheduled, the day off so scheduled will be forfeited, unless a mutually agreeable alternative day off is arranged.
- 10.2.4 Any floating day off for employees who work less than full-time or less than a full year shall be prorated on the basis of hours worked as compared to full-time employment.
- 10.2.5 Floating holiday balances remaining at the time of separation will be forfeited. Employees who are laid off shall be permitted to exhaust their floating holiday balance prior to layoff, subject to department head approval, considering the needs of the department, specifically with regard to the employee's assigned duties and the employee's desires.

ARTICLE 11: VACATIONS

11.1 Each employee shall be entitled to an annual paid vacation, accrued as follows:

11.1.1 For full-time employees:

Less than three (3) years of service - 88 hours per year.

Three (3) years of service through five (5) years of service - 104 hours per year.

Six (6) years of service through ten (10) years of service - 136 hours per year.

Eleven (11) years of service through fifteen (15) years of service - 152 hours per year.

Over fifteen (15) years of service - 176 hours per year.

- 11.1.2 For permanent part-time employees: a proportional equivalent based on the assigned number of hours worked per week as compared to those worked by a full-time employee.

11.2 Maximum Accrual

Vacation may be accrued up to a maximum of three hundred thirty-six (336) hours for full time employees, and a prorated amount for permanent part time employees. After reaching said maximum, the employee must take time off or accrual will be frozen. Upon separation, there will be no payment for hours in excess of the maximum accrual.

11.3 Vacation Scheduling

11.3.1—The department head shall determine the vacation schedule considering the needs of the department, specifically with regard to the employee’s assigned duties and the employee’s desires. Use of vacation is subject to the advanced approval of the Department Director or designee. Any and all vacation granted pursuant to this Article shall be granted at time or times as will not reduce the number of employees below that which is reasonably necessary for the efficient conduct of the public business of such department, division or work group. Vacation time requested shall not be unreasonably denied.

11.3.1.1 Vacation Scheduling for Personal Business

11.3.1.2 An employee shall be entitled to a maximum of three (3) vacation days per calendar year for personal business. Such leave shall be deducted from accrued vacation, floating holidays, or compensatory time.

11.3.1.3 Personal Business is defined as business of urgent and compelling importance which cannot be taken care of outside of the employee’s normal working hours and which is not covered under other leave provisions of this Memorandum of Understanding or state and federal laws.

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11.3.1.4 An employee shall notify the department head two (2) calendar days before taking this leave, unless an emergency exists which prohibits the employee from providing such advance notice.

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11.3.1.6 Requests shall be considered in accordance with Section 11.3.1 above.

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11.4 Payment on Separation

Accrued vacation time up to the maximums described in Section 11.2 above shall be paid to an employee permanently separated from City service.

11.5 Vacation Cashout

An employee may cash out vacation leave in accordance with the vacation Cashout Policy.

ARTICLE 12: LEAVE PROVISIONS

12.1 Sick Leave

12.1.1 Accrual Rates. The City shall provide each employee with paid sick leave at the rate of eight hours per month, earned on a biweekly basis and computed as follows:

12.1.1.1 Full-time employees may accrue up to a maximum of one thousand four hundred forty (1,440) hours, and a proportional equivalent for part-time employees.

12.1.2 Use of Sick Leave. Sick leave shall be allowed and used in cases of actual personal sickness or disability, medical or dental treatment, or as authorized for other necessary health reasons. Up to six (6) days per year of sick leave may be used in cases of actual sickness or disability, medical or dental treatment of members of the employee's immediate family.

If an employee is scheduled to work on a designated City holiday, and subsequently calls in sick, the employee shall not receive holiday pay.

12.1.3 Abuse Enforcement. The City shall be obligated to monitor all sick leave use, and shall take appropriate actions to ensure that benefits are paid out only for use as authorized in Section 12.1.2.

12.1.3.1 Any employee who does not have an accrued sick leave balance and who does not otherwise qualify under the provisions of this Article 12, shall not be paid for any day of sick leave called in, whether genuine or not.

- 12.1.3.2 Management has the authority to monitor potential sick leave abuse and patterns of abuse, and when there is a reasonable basis for suspecting such abuse, may require medical verification as a condition for payment of sick leave.
- 12.1.4 Except for urgent and compelling reasons, employees who are not at work due to a non-work related illness or injury should not be contacted during their absence. This Section does not modify the provisions of Section 12.1.3.
- 12.1.5 Compensation for Accumulated Sick Leave.
- 12.1.5.1 Resignation. A resigning employee who has fifteen (15) or more years of continuous service shall receive compensation for up to fifteen percent (15%) of his/her accumulated sick leave balance up to a maximum of five hundred (500) hours. Such compensation shall be based on the employee's rate of pay on his/her last day of paid service to the City.
- 12.1.5.2 Retirement. An employee who retires under PERS from the City may elect to receive cash compensation for fifteen percent (15%) of his or her accumulated sick leave balance, up to a maximum of one thousand three hundred sixty (1,360) hours, based upon the employee's rate of pay on his or her last day of paid service to the City. If the employee was hired by the City prior to October 23, 2011, he or she may alternately convert their sick leave balance, up to a maximum of one thousand three hundred sixty (1,360) hours, to retirement health credits at the rate prescribed in Section 12.1.5.3. Employees may combine any of the above two options.
- 12.1.5.3 An employee with a minimum of five (5) years of continuous service hired by the City prior to October 23, 2011 may elect to convert accumulated sick leave to retirement health credits upon retirement from the City according to the following schedule:
- Five (5) years of service to fifteen (15) years of service: eight (8) hours of sick leave for each retirement health credit, with any remainder being rounded to the next higher credit;
- Fifteen (15) years of service to twenty (20) years of service: six (6) hours of sick leave for each retirement health credit, with any remainder being rounded to the next higher credit;
- Over twenty (20) years of service: three (3) hours of sick leave for each retirement health credit, with any remainder being rounded to the next higher credit.

- 12.1.5.4 Layoff. An employee hired by the City prior to October 23, 2011 may, upon layoff, after the health insurance benefit paid under Section 5.8.1 has been exhausted, convert up to a maximum of forty-eight (48) hours of the employee's accrued sick leave balance to retirement health credits at the rate prescribed in Section 12.1.5.3. If laid off with fifteen (15) or more years of continuous service, an employee may elect to receive compensation for up to fifteen percent (15%) of his/her accumulated sick leave balance up to a maximum of five hundred (500) hours, and may combine such option with the retirement health credit conversion described in this subsection if hired by the City prior to October 23, 2011, provided he/she has sufficient accumulated sick leave to do so. Under the compensation option, payout shall be based on the employee's rate of pay on his/her last day of paid service to the City.
- 12.1.6 Double Coverage. Employees who qualify for the retirement health credit conversion may elect double coverage at the rate of two (2) units for every month of paid health insurance.

- 12.1.7 Family Coverage. Employees who qualify for the retirement health credit conversion may elect family coverage at the rate of three (3) units for every month of paid health insurance.
- 12.1.8 Dental Coverage. Employees who qualify for the retirement health credit conversion may elect dental coverage at the rate of one-half (.5) unit for every month of paid dental insurance.
- 12.1.9 Transfer of Sick Leave for Catastrophic Illness. Transfer of sick leave for catastrophic illness is designed to assist employee who have exhausted sick leave due to a catastrophic illness, injury or condition of the employee. This policy allows other employees to make voluntary grants of time to that employee so that he/she can remain in a paid status for a longer period of time, thus partially ameliorating the financial impact of the illness, injury or condition.

A catastrophic illness is defined as an illness which has been diagnosed by a competent physician, requiring an extended period of treatment or recuperation, and which has a significant risk to life or life expectancy. Confirmation of the condition and prognosis by a health care provider chosen by the City may be required.

The Human Resources Department will discuss with AFSCME or their designated representative an appropriate method of soliciting contributions from coworkers. The contributions shall be submitted to Human Resources and Human Resources will process the contribution list in the order established. Any employee shall be allowed to contribute a maximum of eighty (80) hours of sick leave from their accrued sick leave balance to another full-time or permanent part-time employee in the City who is suffering from a catastrophic illness and has exhausted his or her own sick leave, provided, however, they have maintained a positive sick leave balance of forty (40) hours or more following the donation. Once the contribution is made it cannot be rescinded.

Upon return to work, an employee may bank any remaining hours that have been contributed up to a maximum of forty (40) hours. If the contribution list has not been exhausted, the contributing employees will be notified that their contribution was not required and the balance restored.

12.2 Long Term Disability

- 12.2.1 Should any illness or injury extend beyond thirty working (30) days, the City will ensure continued payment to the employee at 66.67 percent of salary, up to a maximum as provided in the long-term disability policy. The amounts paid shall be less any payments received from either Workers' Compensation or retirement. During the first year of disability

and so long as no retirement determination has been made by the City, the employee will be entitled to continued City paid health insurance, AD&D, dental and life insurance benefits providing that the employee continues to pay the employee share of the benefit cost, where applicable. Accrued leave earned shall only continue for periods during which the employee is utilizing accrued leave time.

- 12.2.2 Employees who have a sufficient amount of sick leave time may, at the employee's option, use sick leave on an hour-for-hour basis to delay the start of the long term disability plan. The long term disability plan would start upon the exhaustion of sick leave. The City procedures which allow for follow-up of an employee who has been out on an extended disability shall apply to employees under this section.

~~12.3 — Personal Business Leave~~

- ~~12.3.1 — An employee shall be entitled to a maximum of three (3) days per year for Personal Business Leave without loss of pay. Such leave shall be deducted from floating holidays, vacation or compensatory time.~~
- ~~12.3.2 — Personal Business is defined as business of urgent and compelling importance which cannot be taken care of outside of normal working hours and which is not covered under other leave provisions of this Memorandum of Understanding or leave to care for a member of the immediate family who is ill or injured.~~
- ~~12.3.3 — An employee shall notify the department head two (2) days before taking this leave, unless an emergency exists which prohibits the employee from providing such advance notice.~~
- ~~12.3.4 — Employees shall complete an absence affidavit which shall verify that the employee's use of leave was for personal business of urgent and compelling importance or leave to care for a family member as defined above, and that such leave has not been used for recreational purposes, extension of holidays or vacation, work stoppages, or for matters of purely personal convenience.~~
- ~~12.3.5 — No request shall be unreasonably denied.~~

12.4 Leave Without Pay

12.4.1 Leaves of absence without pay may be granted in cases of personal emergency or when such absences would not be contrary to the best interest of the City.

12.4.2 Requests for leaves of absence without pay must be written and submitted to the department head and Human Resources Director. The Human Resources Director may grant a permanent employee leave of absence without pay for a period not to exceed one (1) year, during which time no benefits and no seniority credit will accrue. Approval shall be in writing and a copy filed with Human Resources. Upon expiration of a regularly approved leave, or within five (5) working days after notice to return to duty, the employee shall be reinstated in the position held at the time the leave was granted. Failure on the part of an employee on leave to report promptly at its expiration, or within three (3) working days after notice to report to duty, may be deemed notice of resignation and/or cause for disciplinary action.

12.4.3 Vacancies created as a result of leave without pay may be filled in the following manner:

- a) By temporary employees for a maximum of six (6) months;
- b) By provisional employees.

If a leave is extended beyond the initial fixed period, temporary employees may be held over for up to three (3) months (for a total term of employment of nine (9) months) in a temporary capacity. Provisional employees may be held over if a leave is extended, or, in cases where the position is vacated, for the duration of the recruitment period.

12.5 Jury Duty and Subpoenas

12.5.1 An employee required to report for jury duty or to answer a subpoena as a witness on behalf of the City, provided the witness has no financial interest in the outcome of the case, shall be granted a leave of absence with pay from his/her assigned duties until released by the court, provided the employee remits to the City all fees received from such duties other than mileage or subsistence allowances within thirty (30) days from the termination of jury service.

12.5.2 This leave of absence with pay shall extend to employees' whose regular shift is a shift outside of the hours of 8:00 A.M. to 5:00 P.M., so that such employees shall not be required to work their regular shift on a day in which they perform jury duty or respond to a subpoena.

12.5.3 When an employee returns to complete a regular shift following time served on jury duty or as a witness, such time falling within work shift shall be considered as time worked for purposes of shift completion and overtime computation. In determining whether or not an employee shall return to his/her regular shift following performance of the duties above, reasonable consideration shall be given to such factors as travel time and a period of rest.

12.6 Military Leave

Military leave of absence shall be granted and compensated in accordance with all applicable laws. Employees entitled to military leave shall give the appointing power an opportunity, within the limits of military regulations, to determine when such leave shall be taken.

12.7 Bereavement Leave

An employee shall be allowed regular pay for not more than 24 hours (or a prorated amount for permanent part time employees) when absent because a death has occurred in the immediate family. For purpose of bereavement leave, members of the immediate family shall be limited to mother, stepmother, father, stepfather, mother-in-law, father-in-law, grandmother or grandfather of the employee, or spouse, brother, stepbrother, sister, stepsister, child, grandchild, domestic partner or dependent of the employee.

To qualify for bereavement leave in the event of the death of a domestic partner, the employee must have filed a declaration of domestic partnership with the Human Resources Department prior to the request to utilize such leave.

Employees may use other appropriate leave for bereavement purposes for relations not included above provided such leave is approved in advance by the Department Director.

12.8 Maternity ~~and Parental Leave~~ ~~Leave of Absence Without Pay~~

Employees are entitled to leaves of absence for maternity, parental bonding, and pregnancy-related disability. All such leaves of absence shall be granted and compensated in accordance with state and federal laws covering these topics, including the California Family Rights Act.

~~12.8.1 Maternity leave of absence without pay or benefits may be granted upon request to non-disabled probationary and permanent female employees for that period of time necessary for the employee to prepare for and recover from the effects of childbirth.~~

~~12.8.2 — The Human Resources Director or designee may designate the specific beginning and ending dates to meet the needs of the employee and the City.~~

~~12.8.3 — The employee on leave shall be entitled to return to an equivalent position within her classification.~~

~~12.9 — Leave for Pregnancy Disability~~

~~12.9.1 — Employees who are working are entitled to use personal illness and injury leave for disabilities caused or contributed to by pregnancy, miscarriage, childbirth, and recovery therefrom on the same terms and conditions governing leaves of absence for other illness or medical disability. Such leave shall not be used for child care, child rearing, or preparation for childbearing, but shall be limited to those disabilities as set forth above. The length of such disability leave, including the date on which the leave shall commence and the date on which the duties are to be resumed, shall be determined by the employee and employee's physician; however, the Human Resources Director may require medical verification of disability.~~

~~12.9.2 — Employees are entitled to leave without pay or other benefits for disabilities because of pregnancy, miscarriage, childbirth, or recovery therefrom when sick leave had been exhausted. The date on which the employee shall resume duties shall be determined by the employee on leave and the employee's physician; however, the Human Resources Director may require a verification of disability.~~

~~12.9.3 — The employee on leave for pregnancy disability shall be entitled to return to an equivalent position within her classification.~~

~~12.10 — Parental Leave~~

~~An employee/parent of either sex may be granted a leave of absence without pay for the purpose of fulfilling parenting responsibilities during the period of one (1) year following the birth of a child or the filing of application for adoption and actual arrival of child in the home. Such leave is to be for a maximum period of six months.~~

12.11 Miscellaneous Leave Provisions

12.11.1 Leaves of absence without pay which exceed four (4) weeks and are for leaves other than military shall not be included in determining seniority.

12.11.2 At the conclusion of a leave of absence an employee shall be returned to an equivalent position within his/her classification.

- 12.11.3 For any unpaid leave of absence the employee may elect to continue insurance coverage for up to the duration of his/her leave of absence at his/her own expense.
- 12.11.4 For any paid leave of absence, all benefits continue to accrue.
- 12.11.5 The Human Resources Director or designee will designate the specific beginning and ending dates to meet the needs of the employee and the City, which shall not be less than four weeks nor exceed one unpaid year.
- 12.11.6 At the conclusion of a leave of absence for any disability the employee may be required to submit a physician's statement certifying that he/she is medically qualified to resume work.
- 12.11.7 All provisions of this Article shall be administered in conformance with all Federal and State Laws.

12.12 Educational Leave and Tuition Reimbursement

- 12.12.1 The City shall contribute Four Thousand Dollars (\$4,000.00) annually on July 1st of each year to the AFSCME educational leave and tuition reimbursement fund. The City will reimburse expenses for tuition, books, lab fees and equipment, and curriculum fees incurred by an employee, for classes completed in accredited institutions of learning or approved specialized training groups leading to an academic degree or improved job related skills. Parking fees or health fees related to enrollment will not be included. Programs must be approved in advance. Reimbursement will be provided upon successful completion of approved courses. Employees must attach a final grade of "C" or better for both undergraduate and graduate work. The employee may not elect to take a "pass-fail" grade if the letter system of grading is offered. Courses providing a "pass/fail" must achieve a "pass" to qualify for reimbursement. Employees wishing to engage in educational programs involving work time may be granted rescheduled time if departmental operations permit. Payment from this fund shall be made on a tax exempt basis only where the expenses are from educational expenses directly related to the employee's current employment, as defined by IRS law. Funds expended on tuition reimbursement will be subject to appropriate IRS regulations.

- ~~12.12.2—Employees wishing to engage in educational programs involving work time may be granted rescheduled time if departmental operations permit. Employees may request an advance of funds subject to the approval of the Human Resources Director. Advances may be granted for tuition, books and other curriculum fees in exchange for a repayment agreement in the event advances are not supported or courses are not satisfactorily completed as indicated by a grade of "C" or better. The employee may not elect to take a "pass fail" grade if the letter system of grading is offered.~~

- 12.12.3 All employees assigned by the City to attend meetings, workshops, or conventions shall have their dues and reasonable expenses paid by the City and shall be allowed to attend such workshops, meeting and conventions on paid City time. Such required educational functions shall be reimbursed from departmental training funds and shall not be counted against the employee's allowance or the annual tuition reimbursement.

Employees may under the tuition reimbursement fund request reimbursement for trade publications, technical books, and printed materials related to the employee's employment.

- 12.12.4 Claims for qualified expenditures shall first be reimbursed to an individual maximum of seven hundred dollars (\$700) per fiscal year. After payment of all such claims, on June 30, should there be unused funds remaining in this fund, qualified claims in excess of seven hundred dollars (\$700) already paid, and received no later than July 15 of that year, shall be reimbursed on a pro-rata basis not to exceed a total annual individual reimbursement of Two Thousand Five Hundred Dollars (\$2,500).

~~12.12.5 The City will reimburse expenses for fees incurred by an employee, for courses completed in stress management, self defense, conflict resolution, and time management from this fund. Participation is limited to One Hundred Fifty Dollars (\$150.00) per employee per year, with a maximum for all such claims of Five Hundred Dollars (\$500.00) for the fiscal year.~~

~~12.12.6 Any unused balance in the fund remaining at the end of the fiscal year shall be added to the subsequent year's fund allotment, except that, upon implementation of this Agreement, provided the fund balance exceeds Eight Thousand Dollars (\$8,000), up to Four Thousand Dollars (\$4,000) shall be transferred to the dental and vision fund to provide additional funding for dental and vision claims during the term of this Agreement. At the end of each claims period, and after the status of the claims have been determined, the City shall provide the Union with that information and the Union, within five (5) days, will advise the City on how much of the Four Thousand Dollars (\$4,000) shall be transferred to the dental fund.~~

~~12.13 Health Savings Account~~

~~The parties agree to meet during the term of this Agreement to discuss the possible establishment of a Health Savings Account (HSA). Any plan developed as a result of these discussions would be subject to approval by the City Council. Nothing herein shall be deemed to commit the City to provide a Health Savings Account.~~

ARTICLE 13: BENEFIT PROGRAMS

13.1 Medical

13.1.1 The City shall continue the existing coverage for medical insurance plans for employees through the term of this Agreement.

~~13.1.2 Each active and each retired employee shall receive a City contribution equal to the minimum employer contribution for agencies participating in the Public Employees' Medical and Hospital Care Act (PEMHCA).~~

~~13.1.3 Each active employee shall be allocated an amount, inclusive of the City contribution specified in Section 13.1.2, to be used to purchase qualified benefits as described in this Section. The amount shall be allocated to each employee according to the health benefits selected, as follows:~~

~~_____ \$1,681.50 per month~~	~~_____ family coverage~~
~~_____ \$1,296.55 per month~~	~~_____ two person coverage~~
~~_____ \$648.26 per month~~	~~_____ single coverage~~
~~_____ \$186.88 per month~~	~~_____ no coverage~~

~~13.1.4 Effective with the implementation of plan year 2014 and thereafter, each active employee shall be allocated an amount, inclusive of the City contribution specified in Section 13.1.2, to be used to purchase qualified benefits as described in this Section. The amount shall be allocated to each employee according to the health benefits selected, as follows:~~

~~_____ \$1,931.07 per month~~	~~_____ family coverage~~
~~_____ \$1,485.44 per month~~	~~_____ two person coverage~~
~~_____ \$742.72 per month~~	~~_____ single coverage~~
~~_____ \$324.00 per month~~	~~_____ no coverage~~

~~13.1.52 The Effective with the implementation of plan year 2015 and thereafter, each active employee shall be allocated an amount, inclusive of the City shall make a direct contribution equal to the minimum employer contribution for agencies participating in the Public Employees Medical and Hospital Care Act (PEMHCA) on behalf of each active employee and qualified retiree, specified in Section 13.1.2, to be used to purchase qualified benefits as described in this Section. The amount shall be allocated to each employee according to the health benefits selected, as follows:~~

~~13.1.3 In addition, the City shall make a contribution to the flexible spending account ("FSA") on behalf of each active employee in an amount which, together with the minimum PEMHCA contribution in 13.1.1 equals the following:~~

~~\$2,085.56 per month~~	~~- family coverage~~
~~\$1,604.28 per month~~	~~- two-person coverage~~

\$802.14 per month - single coverage
~~\$349.00 per month~~ ~~no coverage~~

[EXAMPLE: If the PEMHCA minimum contribution is \$122, then the City shall make an FSA contribution of \$1,963.56 per month for family coverage, \$1,482.28 per month for two person coverage and \$680.14 per month for single coverage.]

Employees who waive coverage will be entitled to \$349.00 per month.

13.1.4 Effective with the implementation of plan year 2016, and thereafter, in addition to the contributions in section 13.1.2, the City shall make a contribution to the flexible spending account ("FSA") on behalf of each active employee in an amount which, together with the minimum PEMHCA contribution in 13.1.1 equals the following:

\$2,148.00 per month - family coverage
\$1,652.00 per month - two-person coverage
\$826.00 per month - single coverage

Employees who waive coverage will be entitled to \$360.00 per month.

13.1.5 Effective with the implementation of plan year 2017, and thereafter, in addition to the contributions in section 13.1.2, the City shall make a contribution to the flexible spending account ("FSA") on behalf of each active employee in an amount which, together with the minimum PEMHCA contribution in 13.1.1 equals the following:

\$2,212.00 per month - family coverage
\$1,665.00 per month - two-person coverage
\$839.00 per month - single coverage

Employees who waive coverage will be entitled to \$367.00 per month.

13.1.5 Consistent with applicable laws and regulations, each employee may use his/her allocated amount for any benefits permitted by law and provided for in the FSA plan document. As of the execution of this agreement, those benefits include:

~~13.1.6 Each employee may use his/her allocated amount for:~~

- a. Health insurance in accordance with PERS regulations and Federal law;
- b. Additional life insurance, provided by the City's insurance carrier, up to the maximum allowed by the City's carrier;
- c. Child care expenses not otherwise reimbursed by the City;

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- d. Any qualified personal medical, dental and vision care expenses not covered by the City's plans, including but not limited to deductibles, co-payments, medication and medical equipment.
 - e. ~~If any employee expends less than the total of his/her allocated amount above the minimum employer contribution in 13.1.2, then that employee will be entitled to receive~~ 80% of ~~such the employee's unused-allocated~~ amount in cash, subject to appropriate tax withholding.
- 13.1.7 Employees who have at least ten (10) continuous years of permanent service with the City and who retire under PERS shall be reimbursed by the City at the rate of one hundred dollars (\$100.00) per month toward the retiree's employee only health care premium once the employee has exhausted the sick leave conversion to retiree health credits under Section 12.1.5.3. This reimbursement shall be in addition to the minimum employer contribution for agencies participating in the Public Employees' Medical and Hospital Care Act (PEMHCA). This section shall not apply to employees hired in a permanent classified position in this unit after October 23, 2009.
- 13.1.8 For part-time employees who are a member of the unit, the City shall prorate the dollar amount allocated under Sections 13.1.3, 13.1.4, and 13.1.5.
- 13.1.9 Employees whose medical insurance premium costs exceed the combined allocation available through the cafeteria plan and Section 13.1.2 shall have the excess cost of their medical premiums paid with before-tax compensation through a premium conversion plan.
- 13.1. 10 Each employee must enroll in an available PEMHCA health insurance plan or demonstrate that he or she has health insurance coverage that is at least eighty percent (80%) comparable overall to a PEMHCA plan in order to receive cash back under Section 13.1.~~6-5~~(e).
- 13.1.11 Employees who wish to have domestic partners covered under the cafeteria plan may do so after filing the "Declaration of Domestic Partnership" form with the California Secretary of State and complying with any other requirements necessary to qualify for domestic partner health benefits under the PEMHCA health plans. It is understood that the premiums and benefits provided as a result of covering domestic partners may be taxable, and that the City will administer the program in accordance with State and Federal Tax regulations.
- 13.1.12 The parties share an interest in addressing the increase in the cost of PEMHCA benefits. The City shall meet and confer with the Union prior to contracting with an alternative provider, consortia or group. However, the Union will have the option to remain in the PEMHCA program.

13.2 Dental ~~and Vision~~

13.2.1 The City shall pay the full cost for Dental Insurance administered by Delta Dental or an equivalent third party administrator up to the annual maximums described in the summary plan description.

~~The City shall contribute One Hundred Seventy Five Dollars (\$175.00) per employee per month to the City's self insured dental and vision plan.~~

13.2.2 Dental benefits will be provided as described in the summary plan description. For purposes of dental reimbursement, the dental claims periods shall run from January 1 to June 30 and from July 1 to December 31. The maximum reimbursement for any claims period shall not exceed One Thousand Five Hundred Dollars (\$1,500.00) for an employee and Seven Hundred Fifty Dollars (\$750.00) for an employee's dependents or domestic partners. The maximum claim for vision shall not exceed Five Hundred Dollars (\$500.00) annually for any employee and Two Hundred Fifty Dollars (\$250.00) annually for an employee's dependents or domestic partners.

The maximum reimbursement for vision shall be separate from the maximum reimbursement for dental.

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~~13.2.3 — On presentation of the City's Dental and Vision Reimbursement Forms accompanied by appropriate receipts, employees will be reimbursed for dental and vision care expenses not covered by other insurance plans up to the maximums set forth in Section 13.2.2 above. Employee reimbursement requests shall be processed upon receipt. At the midpoint between each claims period, employees may submit dependent or domestic partner reimbursement requests and the City will pay fifty percent (50%) of such request. The balance of any dependent or domestic partner adjustments will be made at the end of the normal claims period, provided sufficient funds are available. If the quarterly payments result in the fund having a negative balance, the negative amount will be adjusted during the next claims period. In that case, the parties will meet and discuss ways of eliminating future negative balances.~~

~~13.2.4 — Any excess of funds shall be rolled over to the next period.~~

~~13.2.5 — Domestic partner dental benefits may be taxable to the employee and the benefit will be administered in accordance with State and Federal Tax regulations.~~

13.3 ~~Plan Descriptions~~ Vision

Effective the latter of January 1, 2016, or upon agreement with all employee groups, the City shall pay the full cost for fully insured Vision Insurance provided by VSP, or

an equivalent insurance provider, providing vision benefits as described in the summary plan description. Descriptions of the insurance plans provided herein are contained in the PERS Basic Health Plan Book. The descriptions are for informational purposes only and do not affect the obligations hereunder.

13.4 City Recreation Programs

13.4.1 The City shall contribute Five Thousand Six Hundred Dollars (\$5,600.00) annually on July 1, ~~2015 each year~~ to the AFSCME recreation reimbursement fund. An employee may request a recreation voucher from Human Resources for fees incurred by the employee and/or his/her dependents for participation in recreation programs run by the City's Community Services Department. The processing of the voucher shall be on a first come first served basis. Vouchers must be submitted to Human Resources during the fiscal year the expense was incurred. Such payments shall be made on a tax-exempt basis only where the employee and/or the dependent is enrolled on a space available basis, as defined by IRS law. The employee shall be subject to a maximum reimbursement of Six Hundred Dollars (\$600.00) for fees incurred during the first six months of the fiscal year, and a total of One Thousand Dollars (\$1,000.00) total in any entire fiscal year.

~~13.4.2 In the event that there are unused funds remaining in the recreation reimbursement fund on June 30 of any year, the funds shall be applied to the City's self-insured dental program for this unit.~~

13.4.32 Employees may charge up to \$250.00 per year for recreation room rentals to this fund.

13.4.3 The City shall contribute Two Thousand Eight Hundred Dollars (\$2,800.00) on July 1, 2016, to the AFSCME recreation reimbursement fund. An employee may request a recreation voucher from Human Resources for fees incurred by the employee and/or his/her dependents for participation in recreation programs run by the City's Community Services Department. The processing of the voucher shall be on a first come first served basis. Vouchers must be submitted to Human Resources during the fiscal year the expense was incurred. The employee shall be subject to a maximum reimbursement of Six Hundred Dollars (\$600.00) for fees incurred during the first six months of the fiscal year. Effective January~~December 3-1, 2016~~7, this benefit shall cease.

13.5 City Child Care Programs

13.5.1 The City shall contribute Eight Thousand Dollars (\$8,000.00) on July 1, ~~2015, of each year~~ to the AFSCME Child Care reimbursement fund, and there shall be a One Thousand Two Hundred Dollar (\$1,200.00) maximum amount available to any individual employee, reimbursable at

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the rate of One Hundred Dollars (\$100.00) per month for as long as funds are available. These funds may be used to reimburse an employee for child care provided by any licensed child care provider or put toward the cost of any City run child care program in advance of actual enrollment in that program. Participants in this program will not be allowed to claim family members or any other care givers who are not licensed child care providers.

Such payments shall be made on a tax-exempt basis only where the employee and/or dependent is enrolled on a space available basis, as defined by IRS law.

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~~In the event that there are unused funds remaining in the City Child Care Fund on June 30 of any year, the remaining money shall be prorated toward claims in excess of the One Thousand Two Hundred Dollar (\$1,200.00) annual maximum, up to a total reimbursement of Two Thousand Dollars (\$2,000.00) for any fiscal year.~~

~~Any remaining money in the fund after the proration is applied shall be carried over and applied to the subsequent year's Child Care reimbursement fund.~~

13.5.2 The City shall contribute Four Thousand Dollars (\$4,000.00) on July 1, 2016, to the AFSCME Child Care reimbursement fund, and there shall be a Six Hundred Dollar (\$600.00) maximum amount available to any individual employee, reimbursable at the rate of One Hundred Dollars (\$100.00) per month for as long as funds are available. These funds may be used to reimburse an employee for child care provided by any licensed child care provider or put toward the cost of any City run child care program in advance of actual enrollment in that program. Participants in this program will not be allowed to claim family members or any other care givers who are not licensed child care providers. Such payments shall be made on a tax-exempt basis only where the employee and/or dependent is enrolled on a space available basis, as defined by IRS law. Effective January 1, 2017, this benefit shall cease.

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13.6 Employee Assistance Program

The City shall continue to provide an employee assistance program to employees as currently provided.

13.7 Life Insurance

The City will provide to all employees life insurance at the rate of 1-1/2 times each employee's regular yearly wage.

ARTICLE 14: RETIREMENT

- 14.1 Retirement benefits for employees hired by the City prior to October 23, 2011, shall be those established by the California Public Employees' Retirement System (CalPERS) for local miscellaneous members 2.7% at age 55 formula, single highest year.
- 14.2 Retirement benefits for new employees hired by the City on or after February 12, 2012, who are not new members as defined by CalPERS, shall be those established by the California Public Employees' Retirement System (CalPERS) for local miscellaneous members 2.0% at age 60 formula, highest three years.
- 14.3 For new employees, as defined by CalPERS, hired on or after January 1, 2013, retirement benefits shall be those established by the California Public Employees' Retirement System (CalPERS) for Miscellaneous Members 2.0% at age 62 formula, highest three years.
- 14.4 The City shall pay none of the employee's contribution to CalPERS. The full unit member's contribution shall be deducted from the unit member's pay by the City and forwarded to CalPERS in accordance with the rules and regulations governing such contributions.
- 14.5 The City will continue to apply Internal Revenue Code 414 (h)(2) on the employee's contribution to CalPERS.
- 14.6 Beginning with fiscal year 2011-12, should the employer rate rise above 15.850%, the increase shall be shared equally between the employee and the employer. As an example, if the employer rate for 2011-12 is 16.000%, the City shall pay 15.925% and the employee shall pay 8.075% (inclusive of the 8.000% fixed employee contribution).
- 14.7 Effective as soon as practicable and after January 1, 2014, the employee contribution towards the employer's contribution to the Public Employees' Retirement System (CalPERS) shall be taken as a pre-tax deduction from the employees' paycheck each payroll period. The City and the Union agree that the employee contribution towards the employer's contribution will continue past the expiration of the MOU. If for any reason the City is precluded from making this deduction or the deduction cannot be made on a pre-tax basis, the parties agree to meet and confer regarding ways to cure the defect.

ARTICLE 15: GRIEVANCE PROCEDURE

15.1 Definitions

- 15.1.1 A grievance is an alleged violation, misinterpretation, or misapplication of the provisions of this Memorandum of Understanding, policy and/or procedure manuals affecting the working conditions of the employees covered by this Agreement
- 15.1.2 A “Disciplinary appeal” is an appeal from a disciplinary action of a Letter of Reprimand or higher, against an employee covered by this Memorandum of Understanding.
- 15.1.3 A “grievant” is any employee adversely affected by an alleged violation of the specific provision of this Memorandum, or the Union.
- 15.1.4 A “day” is any day in which the City Hall of Menlo Park is open for business.
- 15.1.5 The “immediate supervisor” is the lowest level administrator who has been designated to adjust grievances and who has immediate jurisdiction over the grievant.

15.2 General Provisions

- 15.2.1 Every effort will be made by the parties to settle grievances at the lowest possible level.
- 15.2.2 All documents dealing with the processing of a grievance shall be filed separately from the personnel files of the participants.
- 15.2.3 No party to a grievance shall take any reprisals against the other party to the grievance because the party participated in an orderly manner in the grievance procedure.
- 15.2.4 Failure of the grievant to adhere to the time deadlines shall mean that the grievance is settled. The grievant and the City may extend any time deadline by mutual agreement.
- 15.2.5 Every effort will be made to schedule meetings for the processing of grievances at times which will not interfere with the regular work day of the participants.
- 15.2.6 Either the City or the Grievant may be represented at any step of the grievance procedure by an individual of the party’s choice.
- 15.2.7 Any employee may at any time present grievances to the City and have such grievances adjusted without the intervention of the Union, as long as

the adjustment is reached prior to advisory arbitration and is not inconsistent with the terms of this Memorandum; provided that the City shall not agree to a resolution of the grievance until the Union has received a copy of the grievance and the proposed resolution and has been given the opportunity to file a response. Upon request of the grievant, the grievant may be represented at any stage of the grievance procedure by a representative of the Union.

- 15.2.8 Failure of a unit member to file a grievance over an adverse action which constitutes a “grievance” as defined herein shall not constitute a waiver of other unit members’ rights to file future grievances involving the same or similar adverse actions.
- 15.2.9 The City and Union may agree to consolidate grievances at Level II and beyond.

15.3 Grievance Procedure (for grievances as defined in 15.1.1)

Grievances will be processed in accordance with the following procedures.

15.3.1 Level I - Immediate Supervisor

- 15.3.1.1 Any employee who believes he/she has a grievance shall present the grievance orally to the immediate supervisor within ten (10) days after the grievant knew, or reasonably should have known, of the circumstances which form the basis for the grievance. Failure to do so will render the grievance null and void. The immediate supervisor shall hold discussions and attempt to resolve the matter within ten (10) days after the presentation of the grievance. It is the intent of this informal meeting that at least one (1) personal conference be held between the aggrieved employee and the immediate supervisor.

15.3.2 Level II - Department Director

- 15.3.2.1 If the grievance is not resolved at Level I and the grievant wishes to press the matter, the grievant shall present the grievance in writing on the appropriate form to the Department Director within ten (10) days after the oral decision of the immediate supervisor. The written information shall include:
 - a) a description of the specific grounds of the grievance including names, dates, and places necessary for a complete understanding of the grievance;
 - b) a listing of the provisions of this Memorandum which are alleged to have been violated;

- c) a listing of the reasons why the immediate supervisor's proposed resolution of the problem is unacceptable; and
 - d) a listing of specific actions requested by the grievant of the City which will remedy the grievance.
 - 15.3.2.2 The Department Director or designee shall communicate the decision to the grievant in writing within ten (10) days after receipt of the grievance. If the Department Director or designee does not respond within the time limits, the grievant may appeal to the next level.
 - 15.3.2.3 With the concurrence of the City, an employee or the Union may choose to file the formal grievance initially at Level II (the Department Director) instead of Level I.
 - 15.3.2.4 Within the above time limits either party may request a personal conference.
- 15.3.3 Level III - Appeal to City Manager
 - 15.3.3.1 If the grievant is not satisfied with the decision at Level II, the grievant may, within ten (10) days of the receipt of the decision at Level II, appeal the decision to the City Manager. The statement shall include a copy of the original grievance, all decisions rendered and a clear and concise statement of the reasons for the appeal.
 - 15.3.3.2 The City Manager or designee shall respond to the grievance in writing within ten (10) days of receipt of the written appeal.
- 15.3.4 Level IV - Arbitration
 - 15.3.4.1 If the grievant is not satisfied with the decision at Level III, the grievant may within five (5) days of the receipt of the decision submit a request in writing to the Union for arbitration of the dispute. Within fifteen (15) days of the grievant's receipt of the decision at Level III, the Union shall inform the City of its intent as to whether or not the grievance will be arbitrated. The Union and the City shall attempt to agree upon an arbitrator. If no agreement can be reached, they shall request that the State Mediation and Conciliation Service supply a panel of five (5) names of persons experienced in hearing grievances involving City employees and who are members of the National Academy of Arbitrators (NAA). Each party shall alternately strike a name until only one (1) name remains. The remaining panel member

shall be the arbitrator. The order of striking shall be determined by lot.

- 15.3.4.2 If either the City or the Union so requests, a separate arbitrator shall be selected to hear the merits of any issue raised regarding the arbitrability of a grievance. No hearing on the merits of the grievance will be conducted until the issue of arbitrability has been decided. The process to be used in selecting an arbitrator shall be as set forth in 15.3.4.1.
- 15.3.4.3 The arbitrator shall, as soon as possible, hear evidence and render a decision on the issue or issues submitted to him/her. If the parties cannot agree upon a submission agreement, the arbitrator shall determine the issues by referring to the written grievance and the answers thereto at each step.
- 15.3.4.4 The City and the Union agree that the jurisdiction and authority of the arbitrator so selected and the opinions the arbitrator expresses will be confined exclusively to the interpretation of the express provision or provisions of this Memorandum at issue between the parties. The arbitrator shall have no authority to add to, subtract from, alter, amend, or modify any provisions of this Memorandum or impose any limitations or obligations not specifically provided for under the terms of this Memorandum. The arbitrator shall be without power or authority to make any decision that requires the City or the administration to do an act prohibited by law.
- 15.3.4.5 After a hearing and after both parties have had an opportunity to make written arguments, the arbitrator shall submit in writing to all parties his/her findings and award.
- 15.3.4.6 The arbitrator shall make a final and binding determination.
- 15.3.4.7 The fees and expenses of the arbitrator shall be shared equally by the City and the Union (including the cost of any list of arbitrators requested pursuant to Section 15.3.4.1). All other expenses shall be borne by the party incurring them, and neither party shall be responsible for the expense of witnesses called by the other. Either party may request a certified court reporter to record the entire arbitration hearing. The cost of the services of such court reporter shall be paid by the party requesting the reporter or shared by the parties if they both mutually agree. If the arbitrator requests a court reporter, then the costs shall be shared by both parties.

15.4 Disciplinary Appeals

- 15.4.1 A “disciplinary appeal” is a formal written appeal of a Notice of Disciplinary Action (post-Skelly) of any punitive disciplinary action including dismissal, demotion, suspension, reduction in salary, letters of reprimand, or transfer for purposes of punishment. However, letters of reprimand are not subject to the arbitration provisions of this procedure. This procedure also shall not apply to the rejection or termination of at will employees, including those in probationary status. Any reduction in pay for change in assignment which occurs in the course of regular rotation and is not punitive shall not be subject to this procedure.
- 15.4.2 Persons on probationary status (entry-level or promotional) may not appeal under this agreement rejection on probation.
- 15.4.3 Letters of Reprimand may be appealed under this section only to the City Manager level (Section 15.4.4.)
- 15.4.4 Any appeal to any punitive disciplinary action (as defined in Section 15.1.2) shall be presented in writing to the City Manager within ten (10) days after receipt of the Notice of Disciplinary Action. Failure to do so will be deemed a waiver of any appeal. The City Manager or designee shall hold a meeting to hear the appeal within ten (10) days after the presentation of the appeal and shall issue a decision on the appeal within ten (10) days after the presentation of the appeal. For letters of reprimand, the City Manager’s decision shall be final. However the employee may write a response and have that response included in his or her personnel file.
- 15.4.5 For appeals of dismissal, demotion, suspension, or reduction in salary, if the employee is not satisfied with the decision of the City Manager, the employee may, within ten (10) days of the receipt of the decision, submit a request in writing to the Union for arbitration of the dispute. Within twenty (20) days of the City Manager’s decision, the Union shall inform the City of its intent as to whether or not the disciplinary matter will be arbitrated. The Union must be the party taking the matter to arbitration.
- 15.4.6 The parties shall attempt to agree to the selection of an arbitrator and may agree to strike names from a list provided by an outside agency such as the State Mediation and Conciliation Service. However, in the event that the City and the Union cannot agree upon the selection of an arbitrator within forty-five (45) days from the date that the Union has notified the City of its intent to proceed to Arbitration, either party may request a list of five (5) labor arbitrators who shall be retired judges of the Superior Court of the County of San Mateo. The Union and City shall attempt to agree to the selection of a retired judge. If no agreement can be reached, each party shall alternately strike a name from the list until one (1) name remains, who shall serve as the arbitrator.

15.4.7 The City and Union agree that the arbitrator shall prepare a written decision containing findings of fact, determinations of issues and a disposition either affirming, modifying or overruling the disciplinary action being appealed. The parties expressly agree that the arbitrator may only order as remedies those personnel actions which the City may lawfully impose.

15.4.8 The fees and expenses of the arbitrator (including the cost of any list of arbitrators) shall be shared equally by the City and Union. All other expenses shall be borne by the party incurring them, and neither party shall be responsible for the expense of witnesses called by the other. Either party may request a certified court reporter to record the entire arbitration hearing. By mutual agreement, the cost of the services of such court reporter shall be shared equally by the parties. However, each party shall be responsible for the cost of transcripts that they order.

15.4.9 Nothing herein constitutes a waiver of City or employee rights otherwise granted by law.

ARTICLE 16: EFFECT ON EXISTING PRACTICES

16.1 Changes in Personnel Rules and Department Regulations

During the term of this Memorandum of Understanding, the parties hereto will meet and confer regarding changes proposed by the City in the City's Personnel Rules and Department Rules and Regulations.

16.2 Effect of Agreement

This Agreement completely supersedes any prior agreements between the parties. It also supersedes any conflicting provision in the City's Personnel Rules.

16.3 Existing Practices

Existing practices and/or benefits which are not referenced in this Memorandum and which are subject to the meet and confer process shall continue without change unless modified subject to the meet and confer process.

16.4 Waiver Clause

Except as provided in Section 16.3, Existing Practices, the employees waive their right to meet and confer during the term of this Agreement on any matter raised during the meeting and conferring which preceded this Agreement.

ARTICLE 17: NONDISCRIMINATION

- 17.1 The parties agree that they, and each of them, shall not discriminate against any employee on the basis of race, religion, color, creed, age, marital status, national origin, ancestry, sex, sexual orientation, medical condition or disability. The parties further agree that this Section shall not be subject to the Grievance Procedure provided in this Agreement.
- 17.2 The parties agree that they, and each of them, shall not discriminate against any employee because of membership or lack of membership in the Union, or because of any authorized activity on behalf of the Union. The parties further agree that this Section may be subject to the Grievance Procedure provided in this Agreement.

ARTICLE 18: MANAGEMENT RIGHTS

- 18.1 Except to the extent that the rights are specifically limited by the provisions of this Agreement, the City retains all rights, powers, and authority granted to it or which it has pursuant to any law, including, but not limited to the rights to:
- Direct the work force;
 - Increase, decrease or re-assign the work force;
 - Hire, promote, demote; discharge or discipline for cause;
 - Transfer or reclassify employees;
 - Assign employees days of work, shifts, overtime and special work requirements, and
 - Determine the necessity, merits, mission and organization of any service or activity of the City or of any City Department, Agency or Unit.
- 18.2 The City has the sole and absolute right to determine the nature and type of, assign, reassign, revoke assignments of or withdraw assignments of, City equipment, including motor vehicles, to or from employees during, after or before hours of duty; to determine the methods, means and numbers and kinds of personnel by which City operations are to be conducted, including the right to contract or subcontract bargaining unit work provided that the City will meet and confer in advance on the impact of subcontracting on work load and safety and any other matter within the scope of representation.
- 18.3 The exercise of the foregoing powers, rights, authority, duties, and responsibilities by the City, the adoption of policies, rules, regulations and practices in furtherance thereof, and the use of judgment and discretion in connection therewith shall be limited only by the specific and express terms of this Memorandum and then only to the extent such specific and express terms hereof are in conformance with the Constitution and laws of the United States and the Constitution and laws of the State of California.
- 18.4 The exercise by the City through its Council and management representatives of its rights hereunder shall not in any way, directly or indirectly, be subject to any grievance procedure nor subject to meeting and conferring.

ARTICLE 19: CONCERTED ACTIVITIES

- 19.1 As used in this Article 19, “strike or work stoppage” means the concerted failure to report for duty, the willful absence from one’s position, the stoppage of work, or the abstinence in whole or in part from the full, faithful performance of the duties of employment for the purpose of inducing, influencing or coercing a change in the conditions of compensation, or the rights, privileges or obligations of employment.
- 19.2 It is agreed and understood that there will be no strike, work stoppage, slowdown, or refusal to fully and faithfully perform job functions with responsibilities, or any interference with the operations of the City, or any concerted effort designed to improve its bargaining position which interferes with, impedes, or impairs City operations by the Union or by its officers, agents or members. The Union agrees that neither the Union nor its officers, agents or members will, in any manner whatsoever, honor, assist or participate in any picketing activities, sanctions or any other form of interference with City operations by any other non-unit employees or members of other employee associations or groups.
- 19.3 Furthermore, the Union agrees that the provisions in this Article 19 are enforceable by the City in a Court of law. The City may, upon its own election, initiate such court action as it deems appropriate to enjoin or impose damages on the Union, its officers, agents or members for activities referred to herein.
- 19.4 It is further agreed and understood that neither the Union nor its officers, agents, or members shall engage in any boycott, picketing or any other concerted attempts to discourage, impair or negatively affect the businesses of members of the City Council.
- 19.5 Nothing herein shall be deemed to limit the remedies available to the City in dealing with concerted activities as described hereinabove.

ARTICLE 20: SEPARABILITY

If any provision of this Agreement shall be declared void or unenforceable by a court of competent jurisdiction, the remaining provisions of this Agreement shall remain in full force and effect, except that either party to the Agreement may request the other party to meet and confer in regard to amending the Agreement to replace the provisions declared void or unenforceable. However, there will be no obligation on either party to agree on a replacement provision.

ARTICLE 21: DISCIPLINARY ACTION

- 21.1 For just cause, the City has the right to discipline, demote, or discharge permanent employees for unsatisfactory work or conduct. Disciplinary action, if taken must be

acted upon within forty-five (45) days of the date of discovery of the basis for the discipline unless the City demonstrates that at the end of the forty-five (45) day period, it was engaged in an active, ongoing investigation of the allegations.

- 21.2 Non-probationary employees whose work or conduct is unsatisfactory but not sufficiently deficient to warrant discipline, demotion, or discharge will be given a written notification of unsatisfactory work or conduct and an opportunity to improve. Failure to correct deficiencies and improve to meet standards may result in discipline, demotion or discharge. Reprimands shall not be subject to the arbitration provisions of Article 15, Disciplinary Appeals.
- 21.3 Notice of disciplinary action must be in writing and served on the employee and their authorized Union representative in person or by certified and regular mail prior to the disciplinary action becoming effective. The notice must be filed on a timely basis with the Human Resources Department and included in the employee's personnel file. The notice of disciplinary action shall include:
 - 21.3.1 Statement of the nature of the disciplinary action;
 - 21.3.2 Effective date of the action;
 - 21.3.3 Statement of the reasons for the proposed action;
 - 21.3.4 Statement in ordinary and concise language of the act or the omissions upon which the reasons for the proposed disciplinary action are based.
 - 21.3.5 In all cases of disciplinary action, the notice shall include a statement advising the employee of his/her right to appeal such action and the right to Union representation.
- 21.4 In cases of demotion, discharge, or suspension of employees in permanent status, the notice of intended discipline shall include a statement of the employee's right to respond, either orally, at a meeting requested by the employee, or in writing. The opportunity to respond shall be afforded prior to the action becoming effective, but the employee must respond no later than five (5) days after receipt of notice of intended disciplinary action. A conference, if requested, shall be scheduled and held as soon as possible but in no event later than thirty (30) days after receipt of notice of intended disciplinary action.
- 21.5 Nothing herein shall prohibit the Union from discussing the issue of a time limit on the duration in which the disciplinary action will remain in the employee's personnel file, however, by entering into such discussions, there shall be no commitment on the part of the City to agree to a time limit.

ARTICLE 22: TRANSFER

- 22.1 Definition

For purposes of this Article, a “transfer” shall consist of a change in work location of an employee from one work site to another work site within the City. Such a transfer does not encompass the process of assignment of a specific position and responsibilities within the department or work location. An employee assigned to more than one work site shall be considered as being transferred only when moved from one City-wide program to another program. A transfer may be initiated by an employee (“voluntary”) or by the City (“administrative”).

22.2 Voluntary Transfers as a Result of Posting and Filling Vacancies

- 22.2.1 A “vacancy” is a new position, an opening arising from a resignation, retirement, or termination, any position to which an employee is not assigned or which is not committed for purposes of leaves, unresolved administrative transfers or layoffs.
- 22.2.2 Notices of vacancies shall be posted for at least five (5) working days on the bulletin board in the City’s administrative offices. Such notices shall be posted as soon as the City determines that a vacancy exists and shall include the position description, location, and other special requirements. A copy of the vacancy notice shall be forwarded to the Union President and a second copy shall be forwarded to the Union office.
- 22.2.3 The request for transfer will be sent to the Human Resources Director with a copy to the Department Director. A conference shall be held at the request of the employee or the Human Resources Director in order to discuss the request.
- 22.2.4 For purposes of selection between two or more employees requesting transfer to a vacant position, the City shall consider the training experience, competencies, length of service in the City, past evaluations, and qualifications of each employee.
- 22.2.5 When the City has considered two or more employees requesting a transfer to a vacant position to be relatively equal on the basis of training, experience, competence, past evaluations, and qualifications, the employee with the most City-wide seniority shall be selected for transfer to the vacant position.
- 22.2.6 The City shall notify the employee requesting transfer, in writing, of the City’s acceptance or denial of the request. The City shall provide written reasons for not granting the transfer request upon the request of the employee. Transfer requests shall be acted upon prior to filling positions by promotion or outside applicants.
- 22.2.7 Only one (1) voluntary transfer may be granted per employee in any one (1) year period.

22.3 Administrative Transfers

22.3.1 An administrative transfer may be initiated by the Human Resources Director or his/her designee and shall be based exclusively on the work related special needs of the City and/or welfare of the employees involved and will not be for punitive or capricious reasons.

22.3.2 In the event that circumstances require that an employee be transferred on an administrative basis, the employee and the Union shall be informed of the reason(s) in writing prior to such action and shall be afforded an opportunity to meet with the Human Resources Director regarding the proposed transfer.

22.3.3 For purposes of selecting which employee shall be administratively transferred in order to meet the needs of the City, the City shall consider the training, experience, competencies, length of service in the City, past evaluations, qualifications, and current classification of each employee considered. All things being relatively equal, the employee with the least City-wide seniority will be transferred.

22.3.4 If total time of service with the City for two (2) or more employees considered equal is the same, then, as between those employees, the transfer will be determined by a lottery.

22.4 Length of Service Defined

22.4.1 For the purpose of this Article, "length of service" means all hours in paid status including holiday, vacation, and paid leave, but does not include any hours compensated for overtime or standby, military leave, unpaid illness, unpaid industrial accident leave, or hours served as a temporary or contract employee in a classification other than the classification from which the employee is being transferred.

22.4.2 No seniority credit shall be earned during periods of separation from service with the City, including suspension without pay as a result of disciplinary action.

ARTICLE 23: SAFETY

23.1 It is the City's intention to provide the safest possible equipment and working conditions to the workforce of the City of Menlo Park. Toward that end, the City is committed to making the necessary expenditures to purchase this equipment.

23.2 The Union and the City agree to continue to participate in the City Safety Committee.

ARTICLE 24: TERM OF AGREEMENT

| This Agreement shall remain in full force and effect up to and including June 30, ~~2015~~2017, and thereafter shall continue in effect year by year unless one of the parties notifies the other in writing no earlier than ninety (90) days prior to the expiration or subsequent contract anniversary and no later than sixty (60) days prior to the expiration or subsequent contract anniversary, of its request to modify, amend, or terminate the Agreement. If the parties enter into subsequent meeting and conferring regarding a successor agreement, the terms and conditions of this Agreement shall remain in effect until a successor Agreement is reached, or until meeting and conferring is concluded.

The terms of this Agreement shall be effective upon the adoption of this Agreement by the City Council except as otherwise provided by specific sections of this Agreement.

Dated: _____

City of Menlo Park

Local 829, A.F.S.C.M.E., AFL-CIO

APPENDIX "A"
CLASSIFICATIONS REPRESENTED BY
AMERICAN FEDERATION OF STATE, COUNTY AND MUNICIPAL EMPLOYEES,
LOCAL 829, AFL-CIO

BELLE HAVEN FAMILY SERVICES PROGRAM MANAGER
BRANCH LIBRARY MANAGER
BUILDING OFFICIAL
BUSINESS MANAGER - DEVELOPMENT SERVICES
CHILDREN'S SERVICES MANAGER
CITY ARBORIST
COMMUNITY SERVICES MANAGER
CUSTODIAL SERVICES SUPERVISOR
DEVELOPMENT SERVICES MANAGER
ENVIRONMENTAL PROGRAMS MANAGER
FACILITIES SUPERVISOR
FINANCIAL SERVICES MANAGER
FLEET SUPERVISOR
GYMNASTICS PROGRAMS COORDINATOR
HOUSING MANAGER
INFORMATION SERVICES MANAGER
LIBRARIAN III
LITERACY PROGRAM MANAGER
PARKS AND TREES SUPERVISOR
PROGRAM SUPERVISOR/TITLE 5
PROGRAM SUPERVISOR/TITLE 22
RECREATION PROGRAM COORDINATOR
RECREATION SUPERVISOR
REVENUE AND CLAIMS MANAGER
SENIOR CIVIL ENGINEER
SENIOR TRANSPORTATION ENGINEER
STREETS SUPERVISOR
SUPPORT SERVICES MANAGER
TECHNICAL SERVICES MANAGER
WATER SYSTEM SUPERVISOR
YOUTH SERVICES COORDINATOR

APPENDIX "B"
AFSCME SALARY SCHEDULE
12/15/13-06/30/15

Job Title	Steps	Annual	Monthly	Bi-Weekly	Hourly
Custodial Services Supervisor	A	\$57,916.66	\$4,455.13	2,227.56	27.8445
	B	\$60,596.92	\$4,661.30	2,330.65	29.1331
	C	\$63,429.34	\$4,879.18	2,439.59	30.4949
	D	\$66,405.22	\$5,108.09	2,554.05	31.9256
	E	\$69,525.20	\$5,348.09	2,674.05	33.4256
Gymnastics Program Coordinator	A	\$60,596.92	\$4,661.30	2,330.65	29.1331
	B	\$63,429.34	\$4,879.18	2,439.59	30.4949
	C	\$66,405.22	\$5,108.09	2,554.05	31.9256
	D	\$69,525.20	\$5,348.09	2,674.05	33.4256
	E	\$72,796.04	\$5,599.70	2,799.85	34.9981
Program Supervisor - Title 5	A	\$60,596.92	\$4,661.30	2,330.65	29.1331
	B	\$63,429.34	\$4,879.18	2,439.59	30.4949
	C	\$66,405.22	\$5,108.09	2,554.05	31.9256
	D	\$69,525.20	\$5,348.09	2,674.05	33.4256
	E	\$72,796.04	\$5,599.70	2,799.85	34.9981
Program Supervisor - Title 22	A	\$60,596.92	\$4,661.30	2,330.65	29.1331
	B	\$63,429.34	\$4,879.18	2,439.59	30.4949
	C	\$66,405.22	\$5,108.09	2,554.05	31.9256
	D	\$69,525.20	\$5,348.09	2,674.05	33.4256
	E	\$72,796.04	\$5,599.70	2,799.85	34.9981
Recreation Program Coordinator	A	\$60,596.92	\$4,661.30	2,330.65	29.1331
	B	\$63,429.34	\$4,879.18	2,439.59	30.4949
	C	\$66,405.22	\$5,108.09	2,554.05	31.9256
	D	\$69,525.20	\$5,348.09	2,674.05	33.4256
	E	\$72,796.04	\$5,599.70	2,799.85	34.9981
Youth Services Coordinator	A	\$60,596.92	\$4,661.30	2,330.65	29.1331
	B	\$63,429.34	\$4,879.18	2,439.59	30.4949
	C	\$66,405.22	\$5,108.09	2,554.05	31.9256
	D	\$69,525.20	\$5,348.09	2,674.05	33.4256
	E	\$72,796.04	\$5,599.70	2,799.85	34.9981
Belle Haven Family Services Prgm Mgr	A	\$69,525.20	\$5,348.09	2,674.05	33.4256
	B	\$72,796.04	\$5,599.70	2,799.85	34.9981
	C	\$76,219.24	\$5,863.02	2,931.51	36.6439
	D	\$79,873.28	\$6,144.10	3,072.05	38.4006
	E	\$83,679.04	\$6,436.85	3,218.42	40.2303

APPENDIX “B”
AFSCME SALARY SCHEDULE
12/15/13-06/30/15

Job Title	Steps	Annual	Monthly	Bi-Weekly	Hourly
Literacy Program Manager	A	\$69,525.20	\$5,348.09	2,674.05	33.4256
	B	\$72,796.04	\$5,599.70	2,799.85	34.9981
	C	\$76,219.24	\$5,863.02	2,931.51	36.6439
	D	\$79,873.28	\$6,144.10	3,072.05	38.4006
	E	\$83,679.04	\$6,436.85	3,218.42	40.2303
Recreation Supervisor	A	\$74,599.47	\$5,738.42	2,869.21	35.8651
	B	\$78,118.75	\$6,009.13	3,004.57	37.5571
	C	\$81,875.60	\$6,298.12	3,149.06	39.3633
	D	\$85,777.65	\$6,598.28	3,299.14	41.2393
	E	\$89,879.01	\$6,913.77	3,456.89	43.2111
Business Manager - Development Svcs	A	\$76,219.24	\$5,863.02	2,931.51	36.6439
	B	\$79,873.28	\$6,144.10	3,072.05	38.4006
	C	\$83,679.04	\$6,436.85	3,218.42	40.2303
	D	\$87,677.16	\$6,744.40	3,372.20	42.1525
	E	\$91,871.99	\$7,067.08	3,533.54	44.1692
City Arborist	A	\$76,219.24	\$5,863.02	2,931.51	36.6439
	B	\$79,873.28	\$6,144.10	3,072.05	38.4006
	C	\$83,679.04	\$6,436.85	3,218.42	40.2303
	D	\$87,677.16	\$6,744.40	3,372.20	42.1525
	E	\$91,871.99	\$7,067.08	3,533.54	44.1692
Facilities Supervisor	A	\$76,219.24	\$5,863.02	2,931.51	36.6439
	B	\$79,873.28	\$6,144.10	3,072.05	38.4006
	C	\$83,679.04	\$6,436.85	3,218.42	40.2303
	D	\$87,677.16	\$6,744.40	3,372.20	42.1525
	E	\$91,871.99	\$7,067.08	3,533.54	44.1692
Fleet Supervisor	A	\$76,219.24	\$5,863.02	2,931.51	36.6439
	B	\$79,873.28	\$6,144.10	3,072.05	38.4006
	C	\$83,679.04	\$6,436.85	3,218.42	40.2303
	D	\$87,677.16	\$6,744.40	3,372.20	42.1525
	E	\$91,871.99	\$7,067.08	3,533.54	44.1692
Parks and Trees Supervisor	A	\$76,219.24	\$5,863.02	2,931.51	36.6439
	B	\$79,873.28	\$6,144.10	3,072.05	38.4006
	C	\$83,679.04	\$6,436.85	3,218.42	40.2303
	D	\$87,677.16	\$6,744.40	3,372.20	42.1525
	E	\$91,871.99	\$7,067.08	3,533.54	44.1692

APPENDIX “B”
AFSCME SALARY SCHEDULE
12/15/13-06/30/15

Job Title	Steps	Annual	Monthly	Bi-Weekly	Hourly
Streets Supervisor	A	\$76,219.24	\$5,863.02	2,931.51	36.6439
	B	\$79,873.28	\$6,144.10	3,072.05	38.4006
	C	\$83,679.04	\$6,436.85	3,218.42	40.2303
	D	\$87,677.16	\$6,744.40	3,372.20	42.1525
	E	\$91,871.99	\$7,067.08	3,533.54	44.1692
Librarian III	A	\$78,118.75	\$6,009.13	3,004.57	37.5571
	B	\$81,875.60	\$6,298.12	3,149.06	39.3633
	C	\$85,777.65	\$6,598.28	3,299.14	41.2393
	D	\$89,879.01	\$6,913.77	3,456.89	43.2111
	E	\$94,170.13	\$7,243.86	3,621.93	45.2741
Revenue and Claims Manager	A	\$78,118.75	\$6,009.13	3,004.57	37.5571
	B	\$81,875.60	\$6,298.12	3,149.06	39.3633
	C	\$85,777.65	\$6,598.28	3,299.14	41.2393
	D	\$89,879.01	\$6,913.77	3,456.89	43.2111
	E	\$94,170.13	\$7,243.86	3,621.93	45.2741
Water System Supervisor	A	\$79,873.28	\$6,144.10	3,072.05	38.4006
	B	\$83,679.04	\$6,436.85	3,218.42	40.2303
	C	\$87,677.16	\$6,744.40	3,372.20	42.1525
	D	\$91,871.99	\$7,067.08	3,533.54	44.1692
	E	\$96,269.40	\$7,405.34	3,702.67	46.2834
Branch Library Manager	A	\$81,875.60	\$6,298.12	3,149.06	39.3633
	B	\$85,777.65	\$6,598.28	3,299.14	41.2393
	C	\$89,879.01	\$6,913.77	3,456.89	43.2111
	D	\$94,170.13	\$7,243.86	3,621.93	45.2741
	E	\$98,655.57	\$7,588.89	3,794.45	47.4306
Support Services Manager	A	\$85,777.65	\$6,598.28	3,299.14	41.2393
	B	\$89,879.01	\$6,913.77	3,456.89	43.2111
	C	\$94,170.13	\$7,243.86	3,621.93	45.2741
	D	\$98,655.57	\$7,588.89	3,794.45	47.4306
	E	\$103,442.93	\$7,957.15	3,978.57	49.7322
Environmental Programs Manager	A	\$87,677.16	\$6,744.40	3,372.20	42.1525
	B	\$91,871.99	\$7,067.08	3,533.54	44.1692
	C	\$96,269.40	\$7,405.34	3,702.67	46.2834
	D	\$100,858.30	\$7,758.33	3,879.17	48.4896
	E	\$105,730.64	\$8,133.13	4,066.56	50.8320

APPENDIX “B”
AFSCME SALARY SCHEDULE
12/15/13-06/30/15

Job Title	Steps	Annual	Monthly	Bi-Weekly	Hourly
Financial Services Manager	A	\$87,677.16	\$6,744.40	3,372.20	42.1525
	B	\$91,871.99	\$7,067.08	3,533.54	44.1692
	C	\$96,269.40	\$7,405.34	3,702.67	46.2834
	D	\$100,858.30	\$7,758.33	3,879.17	48.4896
	E	\$105,730.64	\$8,133.13	4,066.56	50.8320
Children's Services Manager	A	\$96,269.40	\$7,405.34	3,702.67	46.2834
	B	\$100,858.30	\$7,758.33	3,879.17	48.4896
	C	\$105,730.64	\$8,133.13	4,066.56	50.8320
	D	\$110,853.17	\$8,527.17	4,263.58	53.2948
	E	\$116,223.91	\$8,940.30	4,470.15	55.8769
Community Services Manager	A	\$96,269.40	\$7,405.34	3,702.67	46.2834
	B	\$100,858.30	\$7,758.33	3,879.17	48.4896
	C	\$105,730.64	\$8,133.13	4,066.56	50.8320
	D	\$110,853.17	\$8,527.17	4,263.58	53.2948
	E	\$116,223.91	\$8,940.30	4,470.15	55.8769
Housing Manager	A	\$96,269.40	\$7,405.34	3,702.67	46.2834
	B	\$100,858.30	\$7,758.33	3,879.17	48.4896
	C	\$105,730.64	\$8,133.13	4,066.56	50.8320
	D	\$110,853.17	\$8,527.17	4,263.58	53.2948
	E	\$116,223.91	\$8,940.30	4,470.15	55.8769
Information Services Manager	A	\$110,853.17	\$8,527.17	4,263.58	53.2948
	B	\$116,223.91	\$8,940.30	4,470.15	55.8769
	C	\$121,887.66	\$9,375.97	4,687.99	58.5998
	D	\$127,793.12	\$9,830.24	4,915.12	61.4390
	E	\$133,984.83	\$10,306.53	5,153.26	64.4158
Building Official	A	\$100,858.30	\$7,758.33	3,879.17	48.4896
	B	\$105,730.64	\$8,133.13	4,066.56	50.8320
	C	\$110,853.17	\$8,527.17	4,263.58	53.2948
	D	\$116,223.91	\$8,940.30	4,470.15	55.8769
	E	\$121,887.66	\$9,375.97	4,687.99	58.5998
Senior Civil Engineer	A	\$100,858.30	\$7,758.33	3,879.17	48.4896
	B	\$105,730.64	\$8,133.13	4,066.56	50.8320
	C	\$110,853.17	\$8,527.17	4,263.58	53.2948
	D	\$116,223.91	\$8,940.30	4,470.15	55.8769
	E	\$121,887.66	\$9,375.97	4,687.99	58.5998

APPENDIX “B”
AFSCME SALARY SCHEDULE
12/15/13-06/30/15

Job Title	Steps	Annual	Monthly	Bi-Weekly	Hourly
Senior Transportation Engineer	A	\$100,858.30	\$7,758.33	3,879.17	48.4896
	B	\$105,730.64	\$8,133.13	4,066.56	50.8320
	C	\$110,853.17	\$8,527.17	4,263.58	53.2948
	D	\$116,223.91	\$8,940.30	4,470.15	55.8769
	E	\$121,887.66	\$9,375.97	4,687.99	58.5998
Development Services Manager	A	\$110,853.17	\$8,527.17	4,263.58	53.2948
	B	\$116,223.91	\$8,940.30	4,470.15	55.8769
	C	\$121,887.66	\$9,375.97	4,687.99	58.5998
	D	\$127,793.12	\$9,830.24	4,915.12	61.4390
	E	\$133,984.83	\$10,306.53	5,153.26	64.4158
Technical Services Manager	A	\$98,655.57	\$7,588.89	3,794.45	47.4306
	B	\$103,442.93	\$7,957.15	3,978.57	49.7322
	C	\$108,412.21	\$8,339.40	4,169.70	52.1213
	D	\$113,639.50	\$8,741.50	4,370.75	54.6344
	E	\$119,104.37	\$9,161.87	4,580.94	57.2617

~~APPENDIX "C-1"~~

~~CITY OF MENLO PARK DENTAL PLAN~~

~~ELIGIBLE EMPLOYEES:~~

~~All present full-time salaried employees are eligible to participate in the plan.~~

~~Newly hired employees are eligible to participate in the plan following six months of continuous employment.~~

~~DEPENDENTS:~~

~~Dependents will be covered by the plan only if there should be sufficient funds to pay 100% of allowable employees' claims.~~

~~Dependents shall be defined under this program as the employee's spouse and his/her children up to the age of 26.~~

~~MAXIMUM COVERAGE:~~

~~For each six-month period reimbursements shall be limited to the maximum coverage as stated in Section 13.2. Maximum coverage for employees who work less than full-time shall be prorated on the basis of hours worked as compared to full-time employment. Payments on claims will be based upon standard fees as determined by the dental committee.~~

~~REQUEST FOR REIMBURSEMENT:~~

~~A City of Menlo Park Dental Reimbursement Form must be completed by the employee's dentist indicating the type of service before the claim will be approved for reimbursement by the City. These forms are available through Human Resources. The forms should be returned to Human Resources at the completion of treatment.~~

~~TERMINATION OF INSURANCE:~~

~~When the employee terminates with the City, his/her dental insurance ceases. Any outstanding claims up to the date of termination will be considered for payment as long as the employee has worked three of the six months in the reimbursement period.~~

~~COVERAGE~~

- ~~• Routine office visits and oral examinations, but not including more than one such examination of the same Covered Person in any six-month period.~~
- ~~• Fluoride or other prophylaxis treatments~~

- ~~Dental X Rays~~
- ~~Extraction~~
- ~~Teeth cleaning~~
- ~~Oral surgery, including excision of impacted teeth~~
- ~~Crown, bridges, except as specified under “exclusions and limitations”~~
- ~~Orthodontic care, treatment, services and supplies~~
- ~~Anesthetics administered in connection with oral surgery or other covered dental services~~
- ~~Fillings~~
- ~~Treatment of periodontal and other diseases of the gums and tissues of the mouth~~
- ~~Endodontic treatment, including root canal therapy~~
- ~~Initial installation of full or partial dentures or fixed bridgework to replace one or more natural teeth extracted while insured~~
- ~~Replacement of an existing partial or full removable denture or fixed bridgework to replace extracted natural teeth; but only if evidence satisfactory to the City is presented that:~~
 - a. ~~The replacement or addition of teeth is required to replace one or more additional natural teeth extracted while insured under the plan; or~~
 - b. ~~The existing denture or bridgework was installed at least 5 years prior to its replacement and that the existing denture or bridgework cannot be made serviceable; or~~
 - c. ~~The existing denture is an immediate temporary denture and replacement by a permanent denture is required, and takes place within 12 months from the date of installation of the temporary denture~~
- ~~Replacement of a lost or stolen prosthetic device or bridgework~~
- ~~Repair or recementing of crowns, inlays and fixed bridgework~~
- ~~Repair or relining of dentures~~
- ~~Other covered charges as determined by the Dental Committee~~

EXCLUSIONS AND LIMITATIONS

Covered dental expenses will not include charges:

- For any dental work covered under a Major Medical Expense Plan
- Incurred because of an accidental bodily injury which arises out of or in the course of employment, or a sickness entitling to the insured to benefits under the Employees' Compensation Act or similar legislation
- Incurred in a Veteran's Hospital by the hospital or by a dentist employed by the hospital
- Which are primarily for cosmetic purposes
- Incurred as a result or act of war, declared or undeclared
- Incurred for the initial installation of dentures and bridgework when such charges are incurred for replacement of congenitally missing teeth, or for replacement of natural teeth all of which were lost when the employee was not insured under the plan
- For space maintainers
- Incurred as a result of a need for prosthetic devices including bridges and crowns and the fitting thereof which were ordered while the employee was not insured under the plan, or which were delivered after termination of insurance
- Not found to be valid upon verification with the dentist rendering the service

HOW IT WORKS

The City of Menlo Park has agreed to contribute to a dental fund a monthly amount per employee. Accumulated funds will be used to reimburse employees for dental expenses they have incurred during a particular six month period, in accordance with Section 13.2. Any excess of funds shall be rolled over to the next period.

FORMS PROCEDURE

- ~~1. Obtain dental forms from Human Resources.~~
- ~~2. Submit the form to your dentist for his completion.~~
- ~~3. At the completion of your dental work or near the end of the reimbursement period, sign the form for that work which has been completed. Your dentist will also need to sign the form. Please return the form to Human Resources.~~

APPENDIX "C-2"

CITY OF MENLO PARK VISION PLAN

ELIGIBLE EMPLOYEES:

~~All present full-time or part-time permanent employees who are represented by A.F.S.C.M.E. and their dependents are eligible to participate in the vision plan.~~

~~Newly hired employees are eligible to participate in the vision plan after six months of continuous employment.~~

MAXIMUM COVERAGE:

~~For each one year period reimbursements shall be limited to the maximum coverage as stated in Section 13.2. Maximum coverage for employees who work less than full time shall be prorated on the basis of hours worked as compared to full-time employment. Payments on claims will be based upon standard fees.~~

REQUEST FOR REIMBURSEMENT:

~~A City of Menlo Park Employees' Vision Claim Form must be completed by the employee indicating the type of service before the claim will be approved for reimbursement by the City. These forms are available through Human Resources. The forms should be returned to Human Resources at the completion of treatment, and accompanied by a receipt from a qualified optometrist, ophthalmologist or optician. An accepted and properly completed request for reimbursement form will be eligible for prorated reimbursement within the one year period in which the vision care was performed.~~

TERMINATION OF INSURANCE:

~~When the employee terminates with the City, his/her vision insurance ceases. Any outstanding claims up to the date of termination will be considered for payment as long as the employee has worked three of the twelve months in the reimbursement period.~~

COVERAGE

- ~~• Routine eye examinations by an optometrist or ophthalmologist, but not including more than one such examination of the same Covered Person in any six month period~~
- ~~• Eyeglasses, including lenses and frames~~

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~~A.F.S.C.M.E. Vision Plan~~
~~Page 2~~

- ~~• Hard or soft contact lenses~~
- ~~• Other covered charges as determined appropriate~~

~~EXCLUSIONS AND LIMITATIONS~~

~~Covered vision expenses will not include charges:~~

- ~~• For any eye care covered under the employee's regular medical or health plan~~
- ~~• For noncorrective sunglasses, unless required for medical reasons~~
 - ~~• For industrial and athletic safety frames and lenses~~
 - ~~• For lens adornment, such as engraving and jewelry~~
- ~~• Incurred because of an accidental bodily injury which arises out of or in the course of employment, or a sickness entitling the insured to benefits under the Employees' Compensation Act or similar legislation~~
- ~~• Incurred in a Veteran's Hospital by the hospital or by an optometrist or ophthalmologist employed by the hospital~~
- ~~• Incurred as a result of act of war, declared or undeclared~~
- ~~• Not found to be valid upon verification with the optometrist, ophthalmologist or optician rendering the service~~

~~FORMS PROCEDURE~~

- ~~—1. Obtain a Vision Claim form from Human Resources.~~
- ~~—2. Complete the form and submit it with receipts to Human Resources.~~

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APPENDIX “~~DC~~”

Menlo Park Labor Management Committee (LMC)

GOAL

The Union and Management have a sincere desire to maintain and improve their progressive, mature and cooperative labor relations/personnel relationship throughout the length of the contract.

MEETINGS

In order to facilitate this, the parties agree to meet as necessary to discuss work and personnel/labor relations related issues of interest to either the employees or management. These meetings shall not replace informal grievance meetings nor the responsibilities of the parties to meet and confer pursuant to the law and the agreement. However topics may include preliminary discussions of matters which may later develop into more formal concerns to be dealt with in official forums.

PARTICULARS

In attendance will be representatives from the City of Menlo Park, as determined by the issues to be discussed. A Union staff person and three members selected by the union shall represent the employees. Additional department heads, members or consultants may be included as necessary.

Agenda shall be set in advance and mutually agreed to except that there shall be a regular item for either party to confirm or dispel rumors in labor relations/personnel topics since the last meeting.

Additional meetings may be set with mutual agreement.

Minutes shall be taken with each side alternately taking responsibility for taking and reproducing them. Confidential personal issues shall be discussed off the record and summarized in the minutes.

CALPERS LABOR MANAGEMENT COMMITTEE (CLMC)

Effective for the term of this agreement, the City and Union agree to the establishment of a CalPERS Labor Management Committee (CLMC) to serve as an advisory committee and to facilitate employee education and involvement in issues regarding CalPERS retirement benefits, including but not limited to, potential future costs increases and the impacts of said cost increases to the financial stability of the City.

The City and the Union shall each select their own representatives and in equal number, with no more than three (3) on each side. Each side is encouraged to propose issues for discussion, and the committee will jointly set priorities. Decision making within this forum will be by

consensus. The CLMC will set up regular meetings to occur not less than once per quarter and a means for calling additional meetings to handle issues on an ad hoc basis.

The CLMC is not authorized to meet and confer or create contractual obligations nor are they to change the MOU to authorize any practice in conflict with existing contracts or rules.

APPENDIX “A”

CLASSIFICATIONS REPRESENTED BY AMERICAN FEDERATION OF STATE,
COUNTY AND MUNICIPAL EMPLOYEES, LOCAL 829, AFL-CIO
PROPOSED 10/20/2015

BELLE HAVEN FAMILY SERVICES PROGRAM MANAGER
BRANCH LIBRARY MANAGER
BUILDING OFFICIAL
BUSINESS MANAGER - DEVELOPMENT SERVICES
CHILDREN’S SERVICES MANAGER
CITY ARBORIST
COMMUNITY SERVICES MANAGER
CUSTODIAL SERVICES SUPERVISOR
DEVELOPMENT SERVICES MANAGER
ENVIRONMENTAL PROGRAMS MANAGER
FACILITIES SUPERVISOR
FINANCIAL SERVICES MANAGER
FLEET SUPERVISOR
GYMNASTICS PROGRAMS COORDINATOR
HOUSING MANAGER
INFORMATION SERVICES MANAGER
LIBRARIAN III
LITERACY PROGRAM MANAGER
PARKS AND TREES SUPERVISOR
PROGRAM SUPERVISOR/TITLE 5
PROGRAM SUPERVISOR/TITLE 22
RECREATION PROGRAM COORDINATOR
RECREATION SUPERVISOR
REVENUE AND CLAIMS MANAGER
SENIOR CIVIL ENGINEER
SENIOR TRANSPORTATION ENGINEER
STREETS SUPERVISOR
SUPPORT SERVICES MANAGER
TECHNICAL SERVICES MANAGER
WATER SYSTEM SUPERVISOR
YOUTH SERVICES COORDINATOR

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APPENDIX "B"
AFSCME SALARY SCHEDULE
PROPOSED 10/20/2015

Job Title	Steps	Annual	Monthly	Bi-Weekly	Hourly
Custodial Services Supervisor	A	\$59,654.16	\$4,301.98	\$2,294.39	\$28.6799
	B	\$62,414.83	\$4,501.07	\$2,400.57	\$30.0071
	C	\$65,332.22	\$4,711.46	\$2,512.78	\$31.4097
	D	\$68,397.38	\$4,932.50	\$2,630.67	\$32.8834
	E	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
Gymnastics Program Coordinator	A	\$62,414.83	\$4,501.07	\$2,400.57	\$30.0071
	B	\$65,332.22	\$4,711.46	\$2,512.78	\$31.4097
	C	\$68,397.38	\$4,932.50	\$2,630.67	\$32.8834
	D	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	E	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
Program Supervisor - Title 5	A	\$62,414.83	\$4,501.07	\$2,400.57	\$30.0071
	B	\$65,332.22	\$4,711.46	\$2,512.78	\$31.4097
	C	\$68,397.38	\$4,932.50	\$2,630.67	\$32.8834
	D	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	E	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
Program Supervisor - Title 22	A	\$62,414.83	\$4,501.07	\$2,400.57	\$30.0071
	B	\$65,332.22	\$4,711.46	\$2,512.78	\$31.4097
	C	\$68,397.38	\$4,932.50	\$2,630.67	\$32.8834
	D	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	E	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
Recreation Program Coordinator	A	\$62,414.83	\$4,501.07	\$2,400.57	\$30.0071
	B	\$65,332.22	\$4,711.46	\$2,512.78	\$31.4097
	C	\$68,397.38	\$4,932.50	\$2,630.67	\$32.8834
	D	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	E	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
Youth Services Coordinator	A	\$62,414.83	\$4,501.07	\$2,400.57	\$30.0071
	B	\$65,332.22	\$4,711.46	\$2,512.78	\$31.4097
	C	\$68,397.38	\$4,932.50	\$2,630.67	\$32.8834
	D	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	E	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
Belle Haven Family Services Pgm Mgr	A	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	B	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
	C	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	D	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	E	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
Literacy Program Manager	A	\$71,610.96	\$5,164.25	\$2,754.27	\$34.4283
	B	\$74,979.92	\$5,407.21	\$2,883.84	\$36.0480
	C	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	D	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	E	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
Recreation Supervisor	A	\$76,837.46	\$5,541.16	\$2,955.29	\$36.9411
	B	\$80,462.31	\$5,802.57	\$3,094.70	\$38.6838
	C	\$81,875.60	\$5,904.49	\$3,149.06	\$39.3633
	D	\$88,350.98	\$6,371.46	\$3,398.11	\$42.4764
	E	\$92,575.38	\$6,676.11	\$3,560.59	\$44.5074
Business Manager - Development Services	A	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	B	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	C	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	D	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	E	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
City Arborist	A	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	B	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	C	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	D	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	E	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943

APPENDIX "B"
AFSCME SALARY SCHEDULE
PROPOSED 10/20/2015

Facilities Supervisor	A	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	B	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	C	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	D	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	E	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
Fleet Supervisor	A	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	B	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	C	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	D	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	E	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
Parks and Trees Supervisor	A	\$76,219.24	\$5,496.58	\$2,931.51	\$36.6439
	B	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	C	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	D	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	E	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
Streets Supervisor	A	\$78,505.82	\$5,661.48	\$3,019.45	\$37.7432
	B	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	C	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	D	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	E	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
Librarian III	A	\$80,462.31	\$5,802.57	\$3,094.70	\$38.6838
	B	\$84,331.87	\$6,081.63	\$3,243.53	\$40.5442
	C	\$88,350.98	\$6,371.46	\$3,398.11	\$42.4764
	D	\$92,575.38	\$6,676.11	\$3,560.59	\$44.5074
	E	\$96,995.24	\$6,994.85	\$3,730.59	\$46.6323
Revenue and Claims Manager	A	\$80,462.31	\$5,802.57	\$3,094.70	\$38.6838
	B	\$84,331.87	\$6,081.63	\$3,243.53	\$40.5442
	C	\$88,350.98	\$6,371.46	\$3,398.11	\$42.4764
	D	\$92,575.38	\$6,676.11	\$3,560.59	\$44.5074
	E	\$96,995.24	\$6,994.85	\$3,730.59	\$46.6323
Water System Supervisor	A	\$82,269.48	\$5,932.90	\$3,164.21	\$39.5526
	B	\$86,189.41	\$6,215.58	\$3,314.98	\$41.4372
	C	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	D	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
	E	\$99,157.48	\$7,150.78	\$3,813.75	\$47.6719
Branch Library Manager	A	\$84,331.87	\$6,081.63	\$3,243.53	\$40.5442
	B	\$88,350.98	\$6,371.46	\$3,398.11	\$42.4764
	C	\$92,575.38	\$6,676.11	\$3,560.59	\$44.5074
	D	\$96,995.24	\$6,994.85	\$3,730.59	\$46.6323
	E	\$101,615.24	\$7,328.02	\$3,908.28	\$48.8535
Support Services Manager	A	\$88,350.98	\$6,371.46	\$3,398.11	\$42.4764
	B	\$92,575.38	\$6,676.11	\$3,560.59	\$44.5074
	C	\$96,995.24	\$6,994.85	\$3,730.59	\$46.6323
	D	\$101,615.24	\$7,328.02	\$3,908.28	\$48.8535
	E	\$106,546.22	\$7,683.62	\$4,097.93	\$51.2241
Environmental Programs Manager	A	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	B	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
	C	\$99,157.48	\$7,150.78	\$3,813.75	\$47.6719
	D	\$103,884.05	\$7,491.64	\$3,995.54	\$49.9443
	E	\$108,902.56	\$7,853.55	\$4,188.56	\$52.3570
Financial Services Manager	A	\$90,307.47	\$6,512.56	\$3,473.36	\$43.4171
	B	\$94,628.15	\$6,824.15	\$3,639.54	\$45.4943
	C	\$99,157.48	\$7,150.78	\$3,813.75	\$47.6719
	D	\$103,884.05	\$7,491.64	\$3,995.54	\$49.9443
	E	\$108,902.56	\$7,853.55	\$4,188.56	\$52.3570

APPENDIX "B"
AFSCME SALARY SCHEDULE
PROPOSED 10/20/2015

Children's Services Manager	A	\$99,157.48	\$7,150.78	\$3,813.75	\$47.6719
	B	\$103,884.05	\$7,491.64	\$3,995.54	\$49.9443
	C	\$108,902.56	\$7,853.55	\$4,188.56	\$52.3570
	D	\$114,178.76	\$8,234.05	\$4,391.49	\$54.8936
	E	\$119,710.63	\$8,632.98	\$4,604.26	\$57.5532
Community Services Manager	A	\$99,157.48	\$7,150.78	\$3,813.75	\$47.6719
	B	\$103,884.05	\$7,491.64	\$3,995.54	\$49.9443
	C	\$108,902.56	\$7,853.55	\$4,188.56	\$52.3570
	D	\$114,178.76	\$8,234.05	\$4,391.49	\$54.8936
	E	\$119,710.63	\$8,632.98	\$4,604.26	\$57.5532
Housing Manager	A	\$99,157.48	\$7,150.78	\$3,813.75	\$47.6719
	B	\$103,884.05	\$7,491.64	\$3,995.54	\$49.9443
	C	\$108,902.56	\$7,853.55	\$4,188.56	\$52.3570
	D	\$114,178.76	\$8,234.05	\$4,391.49	\$54.8936
	E	\$119,710.63	\$8,632.98	\$4,604.26	\$57.5532
Technical Services Manager	A	\$101,615.24	\$7,328.02	\$3,908.28	\$48.8535
	B	\$106,546.22	\$7,683.62	\$4,097.93	\$51.2241
	C	\$111,664.58	\$8,052.73	\$4,294.79	\$53.6849
	D	\$117,048.69	\$8,441.01	\$4,501.87	\$56.2734
	E	\$122,677.50	\$8,846.94	\$4,718.37	\$58.9796
Senior Civil Engineer	A	\$109,078.37	\$7,866.23	\$4,195.32	\$52.4415
	B	\$114,347.60	\$8,246.22	\$4,397.98	\$54.9748
	C	\$119,887.63	\$8,645.74	\$4,611.06	\$57.6383
	D	\$125,696.11	\$9,064.62	\$4,834.47	\$60.4308
	E	\$131,821.44	\$9,506.35	\$5,070.06	\$63.3757
Senior Transportation Engineer	A	\$109,078.37	\$7,866.23	\$4,195.32	\$52.4415
	B	\$114,347.60	\$8,246.22	\$4,397.98	\$54.9748
	C	\$119,887.63	\$8,645.74	\$4,611.06	\$57.6383
	D	\$125,696.11	\$9,064.62	\$4,834.47	\$60.4308
	E	\$131,821.44	\$9,506.35	\$5,070.06	\$63.3757
Building Official	A	\$110,117.00	\$7,941.13	\$4,235.27	\$52.9409
	B	\$115,436.58	\$8,324.75	\$4,439.87	\$55.4984
	C	\$121,029.53	\$8,728.09	\$4,654.98	\$58.1873
	D	\$126,893.28	\$9,150.96	\$4,880.51	\$61.0064
	E	\$133,076.89	\$9,596.89	\$5,118.34	\$63.9793
Information Services Manager	A	\$114,178.76	\$8,234.05	\$4,391.49	\$54.8936
	B	\$119,710.63	\$8,632.98	\$4,604.26	\$57.5532
	C	\$125,544.29	\$9,053.67	\$4,828.63	\$60.3578
	D	\$131,626.91	\$9,492.33	\$5,062.57	\$63.2822
	E	\$138,004.38	\$9,952.24	\$5,307.86	\$66.3483
Development Services Manager	A	\$122,171.22	\$8,810.42	\$4,698.89	\$58.7362
	B	\$128,090.45	\$9,237.29	\$4,926.56	\$61.5819
	C	\$134,332.34	\$9,687.43	\$5,166.63	\$64.5829
	D	\$140,840.73	\$10,156.78	\$5,416.95	\$67.7119
	E	\$147,664.71	\$10,648.90	\$5,679.41	\$70.9926

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APPENDIX "C"
Menlo Park Labor Management Committee (LMC)
10/21/15-06/30/17

GOAL

The Union and Management have a sincere desire to maintain and improve their progressive, mature and cooperative labor relations/personnel relationship throughout the length of the contract.

MEETINGS

In order to facilitate this, the parties agree to meet as necessary to discuss work and personnel/labor relations related issues of interest to either the employees or management. These meetings shall not replace informal grievance meetings nor the responsibilities of the parties to meet and confer pursuant to the law and the agreement. However topics may include preliminary discussions of matters which may later develop into more formal concerns to be dealt with in official forums.

PARTICULARS

In attendance will be representatives from the City of Menlo Park, as determined by the issues to be discussed. A Union staff person and three members selected by the union shall represent the employees. Additional department heads, members or consultants may be included as necessary.

Agenda shall be set in advance and mutually agreed to except that there shall be a regular item for either party to confirm or dispel rumors in labor relations/personnel topics since the last meeting.

Additional meetings may be set with mutual agreement.

Minutes shall be taken with each side alternately taking responsibility for taking and reproducing them. Confidential personal issues shall be discussed off the record and summarized in the minutes.

CALPERS LABOR MANAGEMENT COMMITTEE (CLMC)

Effective for the term of this agreement, the City and Union agree to the establishment of a CalPERS Labor Management Committee (CLMC) to serve as an advisory committee and to facilitate employee education and involvement in issues regarding CalPERS retirement benefits, including but not limited to, potential future costs increases and the impacts of said cost increases to the financial stability of the City.

The City and the Union shall each select their own representatives and in equal number, with no more than three (3) on each side. Each side is encouraged to propose issues for discussion,

and the committee will jointly set priorities. Decision making within this forum will be by consensus. The CLMC will set up regular meetings to occur not less than once per quarter and a means for calling additional meetings to handle issues on an ad hoc basis.

The CLMC is not authorized to meet and confer or create contractual obligations nor are they to change the MOU to authorize any practice in conflict with existing contracts or rules.

**Confidential Salary Schedule
Proposed 10/20/2015**

ATTACHMENT E

Classification	Step	Annual	Monthly	Bi-Monthly	Hourly
Human Resources Assistant	A	\$52,998.69	\$4,076.82	\$2,038.41	\$25.4801
	B	\$55,452.60	\$4,265.58	\$2,132.79	\$26.6599
	C	\$58,084.75	\$4,468.06	\$2,234.03	\$27.9254
	D	\$60,881.22	\$4,683.17	\$2,341.59	\$29.2698
	E	\$63,673.20	\$4,897.94	\$2,448.97	\$30.6121
Executive Secretary to the City Manager	A	\$69,375.63	\$5,336.59	\$2,668.29	\$33.3537
	B	\$73,401.19	\$5,646.25	\$2,823.12	\$35.2890
	C	\$76,854.32	\$5,911.87	\$2,955.94	\$36.9492
	D	\$80,468.33	\$6,189.87	\$3,094.94	\$38.6867
	E	\$84,326.15	\$6,486.63	\$3,243.31	\$40.5414
Human Resources Analyst	A	\$84,055.56	\$6,465.81	\$3,232.91	\$40.4113
	B	\$88,098.07	\$6,776.77	\$3,388.39	\$42.3548
	C	\$92,296.49	\$7,099.73	\$3,549.86	\$44.3733
	D	\$96,709.53	\$7,439.19	\$3,719.60	\$46.4950
	E	\$99,455.78	\$7,650.44	\$3,825.22	\$47.8153

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STAFF REPORT

City Council

Meeting Date:

10/20/2015

Staff Report Number:

15-156-CC

Informational Item

Summary of Council Comments from the October 6, 2015 City Council Meeting on the General Plan and M-2 Area Zoning Update

Recommendation

This is an informational item only and requires no City Council action. If Council believes that the areas of interest and guidance from the October 6, 2015 meeting on the General Plan and M-2 Area zoning as summarized in Attachment A require further clarification by the Council, the topic should be scheduled for the Council meeting on November 10.

Policy Issues

The General Plan and M-2 Area Zoning update will consider a number of policy issues. However, this staff report is solely an opportunity to confirm that staff accurately captured Council's direction from the meeting of October 6, 2015.

Background

On October 6, 2015, the City Council reviewed the Draft General Plan Land Use and Circulation Elements and M-2 Area Zoning Summary. At the meeting, both members of the public and Council had an opportunity to provide feedback and ask questions. The October 6 Council meeting followed three General Plan Advisory (GPAC) meetings, two open houses and a Planning Commission study session on the draft documents between June and September 2015. During this time, staff and the consultant were focused on drafting and fine-tuning the goals, policies and programs of the Land Use and Circulation Elements and commenced on creating the new M-2 Area zoning districts.

The common themes raised at all of the meetings were housing, traffic, community amenities, emergency services, and sustainability and resiliency. The meetings and event summaries, as well as additional information related to ConnectMenlo, including presentations and handouts, are available for review on the ConnectMenlo webpage at www.menlopark.org/connectmenlo.

Analysis

The ConnectMenlo process is slightly over halfway completed. The October 6 Council meeting served as a check-in to make sure that the process and draft work products are on the right track and the next steps are appropriate. At the meeting, over 20 members of the public spoke. Some of the speakers highlighted their comments included in the seven pieces of correspondence received following the release of the staff report. The public comments covered a number of topics, including the need for housing at all income levels and integrating affordable housing throughout the City, stronger language and metrics for sustainability, traffic, relinquishment of Willow Road from Caltrans, sea level rise, the name for the M-2 Area, education and youth services, and opportunity for new mixed use areas and public amenities.

The Council also provided a number of comments and posed questions to staff to think about as the process moves forward. The Council's comments are summarized in a table included as Attachment A. The table also includes responses to how staff and the consultant team intend to address the comment. The first six comments in the table were those summarized by the consultant at the end of Council's discussion as the most pressing items. The items include the following topics:

- Local employment and other metrics,
- Main Street concept,
- Public benefit/amenities,
- Emergency services,
- Jobs/housing balance, and
- Naming of the M-2 Area

The remaining nine comments in the table were noted by the Council during the meeting, and staff and the consultant team intend to consider them as the process moves forward. Staff intends to use this summary as a guide so that resources can be directed appropriately in the next steps of the process, which includes the following:

- Developing the details of the new M-2 Area zoning districts,
- conducting community meetings,
- receiving feedback from the GPAC, and
- completion of the environmental impact report (EIR) and fiscal impact analysis (FIA).

Depending on the outcome of zoning, EIR and FIA, additional fine-tuning may be needed to goals, policies and programs of the Land Use and Circulation Elements.

During the upcoming months, staff will be crafting the draft M-2 Area zoning development regulations, which include a discussion on public amenities, and the associated design standards. As part of the review process, the schedule includes two community meetings and a follow up General Plan Advisory Committee (GPAC) meeting. A tentative schedule is included as Attachment B.

No action is needed at this time by the Council. However, if the Council believes that the guidance and areas of interest require further clarification, the Council should schedule the item for discussion at the November 10 City Council meeting.

Attachments

- A. Summary of City Council Comments on the General Plan and M-2 Area Zoning Update from October 6, 2015
- B. Tentative ConnectMenlo Schedule – October 2015 – July 2016

Report prepared by:

Deanna Chow, Interim Principal Planner

Report reviewed by:

Justin Murphy, Assistant Community Development Director

Summary of City Council Comments from October 6, 2015 Meeting	
Identified for Follow Up at the End of the Council Meeting	How the Item is Intended to be Addressed?
Local Employment and Other Metrics. Include measurable targets in the General Plan.	Staff will investigate and present options for metrics that might be appropriate.
Main Street Concept. Create a sense of place and clarify where the gathering place will be.	One of the visions for the M-2 Area is to create a live/work/play environment that will include a mix of jobs, housing, retail, and services within close proximity of each other. Through the zoning regulations and design standards and not necessarily a street classification, gathering places and a sense of place can be created in the greater Belle Haven area. Here is the applicable policy from the Draft Land Use Element: Policy LU-4.7 Employment Center Walkability. Promote local-serving retail and personal service uses in employment centers and transit areas that support walkability and reduce auto trips, including along a pedestrian-friendly, retail-oriented street in Belle Haven.
Public Benefit/Amenities. What additional tools are available to help fund community amenities?	In addition to the development of a community amenities formula, staff will explore other options to assist funding programs and infrastructure desired by the community. Such tools include enhanced infrastructure financing districts (EIFDs) and the California FreshWorks fund. Here is the applicable program from the Draft Land Use Element: Program LU-1.R Assessment Districts and Impact Fees. Pursue the creation of assessment districts and/or the adoption of development impact fees (e.g., fire impact fees) to address infrastructure and service needs in the community.
Emergency Services. Create a section on emergency services in the Environmental Impact Report (EIR).	In the Draft EIR, emergency services such as fire and police protection will be separate sections discussed in the Public Services and Utilities section of the report. In addition, the Fiscal Impact Analysis (FIA) for the General Plan and M-2 Area Zoning Update will discuss potential impacts on the police and fire services.
Jobs/Housing Balance. Continue to balance jobs/housing so they do not outpace each other.	Staff will review best practices and present potential options for balancing the growth of jobs and housing.
Naming of M-2 Area. Further conversation is needed to talk about the appropriate naming of the "M-2" Area.	"M-2" refers to the existing zoning designation of the area, which has historically been the manufacturing, light industrial, and research and development area of the City. While "M-2" is no longer appropriate because the designation is becoming obsolete. Staff will look for opportunities to engage with the public regarding the name of a use designation to update "M-2."

Additional Comments Noted from the Council Meeting	How the Item is Intended to be Addressed?
Intergovernmental/interagency Coordination. The City needs stronger relationships with agencies (e.g., Caltrans regarding Willow Road relinquishment and Samtrans/Caltrain regarding the Dumbarton Corridor, education and youth internships).	Staff recognizes that coordination within the City and with outside agencies and public/private partnerships is needed, as called for in Policy LU-1.2 Transportation Network Expansion, Policy LU-1.5 Adjacent Jurisdictions, and Program LU-1.D School District Partnership recognize and encourage coordination.
Sea Level Rise. To address the topic of sea level rise, include additional language suggested in one commenter's letter.	The Draft Land Use Element has been revised to include the following modifications to two policies. The commenter suggested the City add language that states a developer cannot object to its proportionate share of cost of constructing tidal flood protection measures. The City is unable to require a developer to pay a proportionate share without nexus. Language has been included that allows the City to consider methods for how new development in areas vulnerable to tidal flooding could enhance tidal projections. Program LU-7.G SAFER Bay Process. Coordinate with the SAFER Bay process that the Menlo Park community's objectives for sea level rise/flood protection, ecosystem enhancement, and recreation trails are adequately taken into consideration. <u>Prior to the conclusion of the SAFER Bay process, consider how new development in areas projected to be vulnerable to tidal flooding could enhance tidal flood protections.</u> Program LU-7.H Sea Level Rise. Establish requirements based on State Sea Level Rise Policy Guidance for development projects of a certain minimum scale in areas potentially affected by sea level rise to ensure protection of occupants and property from flood and other potential effects. <u>Prior to establishment of a suite of program measures, require that new development construct buildings with a base flood elevation that takes into account sea level rise.</u>
Sustainability. To ensure that the Land Use Element is on the right track regarding sustainability, meet with members of the Environmental Quality Commission (EQC).	Staff will be meeting with the EQC General Plan Subcommittee to identify how concerns can be addressed in the proposed Land Use Element, Climate Action Plan, and/or proposed development regulations in the Zoning Ordinance or other provisions of the Municipal Code.
Full Service Hotels. The proposed number and type of hotels should provide an appropriate range of service levels and amenities.	Specific uses, such as a full service or limited service hotel, will be discussed as part of the development of the zoning district regulations.

Housing Affordability. Housing issues such as rent stabilization and anti-displacement require their own discussion, which should be on a future Council agenda.	Housing has been a key issue raised during the ConnectMenlo process. The City currently has existing regulations/ordinances and adopted Guidelines, and an adopted Housing Element that includes programs and policies. The City is also involved in a Countywide nexus study to update the City's below market rate impact fee and exploring a two-tier zoning system that would require new residential development in the M-2 Area to include a percentage of affordable housing. An upcoming joint meeting of the City Council and Housing Commission can provide an opportunity to begin discussing housing issues and options in greater depth.
Youth Activities. Data is needed on the types of activities that are offered at Onetta Harris Community Center in Belle Haven.	Investment in our youth has been an important theme throughout the Connect Menlo process. One of the nine Guiding Principles (Youth Support and Education Excellence) focuses directly on children and young adults having equal access to excellent childcare, education and meaningful training and employment opportunities. This theme is carried through to several of the Land Use policies and programs, including community amenities and school district partnerships. Staff will work with the Community Services Department to provide information on the range of programs that are offered at the Onetta Harris Community Center and through partnerships the City has with organizations such as the Boys and Girls Club.
Average Height Standard. Assure that the average height concept, as shown on the maximum potential development map, will be in the regulations.	As part of the creation of the development regulations and design standards for the proposed zoning districts in the M-2 Area, maximum height, and in some cases, average height, will be identified. The maximum and average heights were identified as part of the creation of the maximum potential development scenario for the area being studied in the EIR.
Best Practices. How do we synthesize policies and determine the optimal balance of competing interests - improvements to traffic, increasing vitality and minimizing displacement? Any best practices or guidance?	As part of the General Plan update, an EIR, FIA, and new zoning are also being prepared. This supporting information will help apprise the public and decision-makers of the potential environmental and economic impacts (both negative and positive) that could result from the project. Once this information is available, there will be opportunities to modify the proposed zoning regulations to help incentivize the right balance of land uses and intensity/density.
Traffic. What are the short term strategies for addressing traffic versus the long term goals, which may require more coordination?	Transportation improvements are generally implemented as development mitigation measures and the City's Capital Improvement Program. The General Plan Circulation Element is a long term guide for future growth, development and infrastructure modifications. As part of the Circulation Element, a more systematic approach to planning transportation and infrastructure needs has been identified. The goals, policies, and programs outlined in the document use safety indicators and operational

	analysis to identify needs through a Transportation Master Plan (TMP). The TMP would review multi-modal transportation needs and prioritize projects to be constructed across the City. The TMP would also be used to develop a nexus between the system-wide improvement projects and future potential development to update the City's Transportation Impact Fee Program. In addition, Policy CIRC-2.14 Impacts of New Development requires new development to mitigate its impacts on the safety and efficiency of the circulation system.



ConnectMenlo Upcoming Activities and Events

Event	Date	Time	Location
Symposium on Zoning Regulations, Design Standards, and Community Amenities	Thursday, November 12, 2015 or Wednesday, November 18, 2015 (tentative)	7-9 p.m.	Council Chambers
Focus Group Meeting on M-2 Area Zoning Requirements and Community Amenities	Tuesday, December 8, 2015 or Thursday, December 17, 2015 (tentative)	7-9 p.m.	Senior Center
GPAC Meeting #9	Thursday, January 14, 2016 (tentative)	6-8 p.m.	Arrillaga Family Recreation Center
<i>Draft Environmental Impact Report (EIR) and Fiscal Impact Analysis (FIA) Release</i>	<i>February 2016</i>		
Planning Commission Meeting on Draft EIR/FIA (during the 45-day review period) and Study Session on M-2 Area Zoning Ordinance Amendments	March 2016		
<i>Final EIR/FIA Release</i>	<i>April 2016</i>		
Planning Commission Meeting on Final EIR/FIA and Draft Land Use and Circulation Elements and Zoning Ordinance Amendments	May 2016		
City Council Meeting on Final EIR/FIA and Draft Land Use and Circulation Elements and Zoning Ordinance Amendments	June 2016		
<i>Estimated Completion of Overall Project</i>	<i>July 2016</i>		

Note: For more information about the ConnectMenlo process, please visit the project webpage at www.menlopark.org/connectmenlo. Actual meeting dates, times, and locations are subject to change.

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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-154-CC****Informational Item:****Update on El Camino Real Corridor Study****Recommendation**

This is an informational item and no Council action is required.

Policy Issues

As part of the 2013-2014 Capital Improvement Plan (CIP), the Council directed staff to prepare the El Camino Real Corridor Study to provide alternatives for potential modifications to El Camino Real consistent with the City's General Plan Circulation Element and El Camino Real/Downtown Specific Plan.

Background

El Camino Real is a major transportation corridor in the region, carrying approximately 30,000 - 45,000 daily vehicles, buses, and serving local business and school traffic. It is a historic asset for the region, but also a barrier to east-west travel in Menlo Park, and an opportunity for the City to define the desired vision for the corridor.

The El Camino Real Lane Reconfiguration Study was approved as part of the City's CIP for Fiscal Year (FY) 2013-2014. A related project, the El Camino Real/Ravenswood Avenue Northbound Right-Turn Lane Design, was also included in the City's CIP for FY 2013-2014 and 2014-2015. These two projects have been combined into one study/preliminary design and were renamed the El Camino Real Corridor Study (Corridor Study). The purpose of the Corridor Study was to identify potential alternatives to modify El Camino Real (ECR) to better meet the community's needs and evaluate each of the proposed alternatives against a set of criteria including impact on traffic congestion, travel time, safety, aesthetics, parking, and multi-modal access.

The Request for Proposals for this project was approved by Council on October 15, 2013. A contract was awarded by the Council to a team led by Whitlock & Weinberger Transportation Consultants (W-Trans) on January 28, 2014.

Analysis

On August 25, 2015, the City Council held a study session to provide direction to staff on next steps for the Corridor Study. At that meeting, the Council voiced support for a Council subcommittee of Councilmembers Keith and Ohtaki to continue to work with staff to develop a concept plan for the El Camino Real Corridor, which may include a bike lane alternative, with a possible parallel route in the northbound direction between Ravenswood-Menlo Avenues and Glenwood-Valparaiso Avenues. There

was also consensus for a trial installation, for potentially a one-year time period. A Summary of Council-directed tasks, current status, and anticipated next steps is outlined in Table 1. Additional detail is provided in the sections below.

Table 1: Summary of Council-directed Tasks		
Task	Status	Next Steps
1. Outreach to Menlo Park Fire Protection District to discuss how addition of bike lanes impedes emergency vehicle access, and address concerns	Initial staff consultation completed, September 2015	Provide trial concept plan for Fire District review prior to submitting to Caltrans
2. Meeting with Caltrans to confirm permitting process, schedule, potential trial installation and parallel route on Merrill-Garwood	Initial consultation completed September 2015. Caltrans voiced support for a bike facility so long as capacity not reduced and facility does not detour to parallel routes	Pre-encroachment permit meeting to identify detailed design review process would follow potential future Council action on the Study
3. Collaborate with neighboring cities to discuss interest in joining a trial project	City Manager/Mayor Meeting with Palo Alto held September 9, 2015.	Finalize transportation staff meeting dates
4. Outreach to ECR businesses between Live Oak to Ravenswood	To be completed	Targeted, door-to-door outreach with business owners on west side of ECR between Live Oak Avenue and Menlo Avenue
5. Prepare cost estimates to identify order of magnitude costs for design and construction	Preliminary estimates completed. Trial installation cost estimated at \$250,000 to \$1,200,000 depending on scope of pedestrian improvements included	Use cost estimate information to determine scope elements and Caltrans oversight and review process
6. Explore alternative sidewalk layout, consider tree root mapping, or identify other strategies, including scope & cost, to preserve trees at Ravenswood/El Camino	Completed, investigated scope of work for subsurface root investigation, determined not likely viable tool to assess potential tree impacts	Complete more detailed layout of alternative sidewalk concept
7. Develop metrics for a trial installation to clearly define what would be considered successful	Consultant team prepared draft list of metrics, currently being reviewed by City staff	Review drafts with Bicycle, Transportation Commissions in November 2015. Council review as part of potential future Council action on the Study.
8. Summarize bike traffic counts on Alma, Willow Place, San Mateo	Completed September 2015	

Next Steps

Staff is continuing to work on the Tasks listed above in Table 1. Following completion, staff will schedule the Corridor Study to come before the Council to adopt the Corridor Study and select a preferred alternative to move into environmental review and design. It is anticipated that the next report to the City Council for action would occur in early 2016.

Impact on City Resources

The cost and staff time for the Corridor Study were budgeted in the City's Capital Improvement Plan for FY 2013-2014 and 2014-2015. No additional funds are currently being requested to complete the Corridor Study. Depending on the alternative chosen, a future appropriation request may be required.

Environmental Review

Construction of any of the proposed alternatives would require environmental review required under the California Environmental Quality Act (CEQA). Following City Council identification of a preferred alternative, the appropriate level of environmental review will be determined.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

- A. [El Camino Real Corridor Report](http://menlopark.org/DocumentCenter/Home/View/7805) <http://menlopark.org/DocumentCenter/Home/View/7805>

Report prepared by:

Nicole H. Nagaya, P.E, Transportation Manager

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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-156-CC****Informational Item:****Update on the City of Menlo Park's Climate Action Plan Update and Status Report for 2015****Recommendation**

This is an informational item and does not require City Council action.

Policy Issues

Annual review of the Greenhouse Gas (GHG) Inventory and Climate Action Plan (CAP) assists the City of Menlo Park in tracking and planning the community's climate impact.

Background

The City has chosen to update its community-wide GHG inventory and CAP annually, which allows for frequent updates and adjustments if needed. Many cities in California are currently working on their first CAP, and those that have adopted a CAP have generally planned to update them every five years.

The purpose of the CAP is to provide strategies that reduce local GHG emissions and assist the City in meeting or exceeding the GHG emission reduction targets established by AB 32 (California's Global Warming Solutions Act of 2006).

In 2011, the City Council adopted a target of reducing community-wide GHG emissions by 27% by 2020 from 2005 levels. On October 7, 2015, Governor Brown signed SB 350 into law, which will increase California's use of renewable power to 50% and establishes a statewide goal of making existing buildings twice as efficient as they currently are by the year 2030. A link to SB 350 is as follows:

http://leginfo.legislature.ca.gov/faces/billNavClient.xhtml?bill_id=201520160SB350

Analysis

On August 26, 2015, the Environmental Quality Commission (EQC) reviewed and commented on the City's GHG Inventory and CAP. At the EQC meeting, the commissioners expressed support for the enclosed report and recommendations; however, there was insufficient time for a comprehensive presentation.

From the base year 2005 to 2013 (the most current GHG emission data available):

- The City's GHG emissions have alternately increased and decreased slightly each year, resulting in essentially a flat line (shown in Figure 2 of the attached report).
- The City's 2013 community-wide GHG emissions include (shown in Figure 3 of the attached report):
 - o Transportation representing 40%,
 - o Built environment representing 55% of the GHG emissions, or specifically:
 - Commercial energy use representing 30%
 - Larger commercial that direct purchases energy representing 9%
 - Residential energy use representing 16%
 - o Solid Waste and the closed landfill at Bayfront Park representing 5%

The City has been recognized as a sustainability leader, through the award of four Beacon Spotlight Awards for sustainability, and presentations at the California Climate Action Planning conference; however, the City has experienced significant growth in residential and commercial construction within the City. Although new buildings and new vehicles are more efficient, in effect, the growth has canceled out the increased efficiencies as new larger homes replace smaller homes, and new commercial spaces serve greater numbers of employees. If the current trends continue, the City will not meet its GHG emissions targets set for 2020. Menlo Park will need to significantly increase our efforts to achieve our goals, as described below.

The attached report entitled "Climate Action Plan Update and Status Report" (Attachment A) and the presentation (Attachment B) provides the following information:

- History of the CAP process in Menlo Park to date
- Update of Menlo Park GHG emissions through 2013, which is the most current data available
- Analysis of the GHG trends
- Status update on each project selected in the previous year's CAP update
- Plan for major CAP projects for the coming five years (FY 2015-2020)

The attached documents detail the projects that will help the City reach its 27% GHG reduction target. Highlights from the CAP include recommendations to implement:

- A Community Choice Energy program (CCE, which is further discussed in a separate informational item to City Council during this meeting) ([Staff Report #15-163-CC](#))
- Zero Net Energy Ready building codes for new construction
- Retrofit of existing buildings to increase energy efficiency
- Improvements in active transportation

Additional actions to ensure achievement of the City's GHG reduction goals may include strategies in the building, transportation, and energy sectors:

- 100% renewable electrical power, through a CCE
- Requiring energy audits and upgrades at the time of property title transfer
- Requiring energy audits at the time of business license renewal
- Significant improvements in public transportation infrastructure serving Menlo Park
- Significant increases in density and height encouraged in land use documents to increase viability of transit, active transportation, and live/work balance
- Parking restrictions, fees and disincentives to driving which will increase demand for active and public transportation options

Staff is planning a City Council Study Session for early 2016 to further discuss these strategies and gain direction from the City Council on project priorities and implementation goals.

Attachments

- A. October 2015 Climate Action Plan Update and Status Report
- B. Climate Action Plan Update and Status Report Presentation

Report prepared by:

Vanessa A Marcadejas, Environmental Services Specialist

Heather Abrams, Environmental Services Manager

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October 2015

Climate Action Plan Update and Status Report

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Introduction

Background

For approximately 1,000 years before the Industrial Revolution, the amount of Greenhouse Gas (GHG) emissions in the atmosphere remained relatively constant. During the 20th century, however, scientists observed a rapid change in the climate change GHG emissions that are attributable to human activities, such as use of fossil fuels to power vehicles and buildings, and disposing of waste in landfills that release GHG emissions.

The Intergovernmental Panel on Climate Change (IPCC) has identified four major GHG emissions—water vapor, carbon dioxide (CO₂), methane (CH₄), and ozone (O₃)—that are the likely cause of an increase in global average temperatures observed within the 20th and 21st centuries. CO₂ is one the most prevalent GHG emissions resulting from human activity. According to the IPCC, the amount of CO₂ has increased by more than 35 percent since preindustrial times and has increased at an average rate of 1.4 parts per million (ppm) per year since 1960, mainly due to combustion of fossil fuels and deforestation.

Climate-change impacts are affected by varying degrees of uncertainty. IPCC's 2007 Fourth Assessment Report projects that the global mean temperature increase from 1990 to 2100, under different climate-change scenarios, will range from 1.4 to 5.8 degrees Celsius (°C) (2.5 to 10.4 degrees Fahrenheit (°F)). In the past, gradual changes in the earth's temperature changed the distribution of species, availability of water, etc. In California potential impacts resulting from climate change are:

- Poor air quality made worse due to more severe heat waves
- Accelerated sea level rise, impacting beaches and infrastructure
- Decreasing Sierra Nevada snow pack, affecting adequate water supplies
- Increased and more severe wildfire seasons
- Reduction in available renewable hydropower
- Increasing threats from pests and pathogens from warmer weather
- Declined productivity in agriculture due to irregular blooms and harvest and increased pests and pathogens.
- Altered timing for wild life migrations and loss of species, impacting food chain and ecosystems.

With this understanding, many local, state, and federal governments around the world are taking action to reduce global GHG emissions. The purpose of Menlo Park's Climate Action Plan (CAP) is to provide strategies that reduce local greenhouse gas (GHG) emissions and assist Menlo Park to meet or exceed the emission reduction targets of AB 32 (California's Global Warming Solutions Act of 2006). AB 32 sets a goal for the state to reduce greenhouse gas emissions to 1990 levels by 2020, and 80% below 1990 levels by 2050. In April 2015, the Governor of California issued an executive order to establish a GHG reduction target of 40% below 1990 levels by 2030.

Menlo Park's first Climate Action Plan was approved by the City Council in 2009 and the Council stated that the Climate Action Plan was intended to be a 'living document' to be updated periodically as current strategies are implemented and as new emission reduction strategies and technologies emerge that effectively reduce emissions. On an annual basis, the Council reviews and approves a report on Menlo

Park's Greenhouse Gas Inventory trend and five year Climate Action Plan strategies and implementation status.

Menlo Park City Council Actions

The City of Menlo Park has taken a number of actions in recent years to address climate change. To provide context and facilitate retrieval of that history, Figure 1 below provides an overview of Menlo Park's climate action planning to date. Appendix A provides a history of the Climate Action Planning reports which have been presented to the City Council.

In addition to the milestones and City Council actions shown below, the City's Environmental Quality Commission meets monthly to discuss a variety of climate action planning related topics, and the City's environmental staff provides leadership in completing climate action planning projects, along with other compliance and regulatory duties. A number of Menlo Park non-profit organizations support these efforts as well.

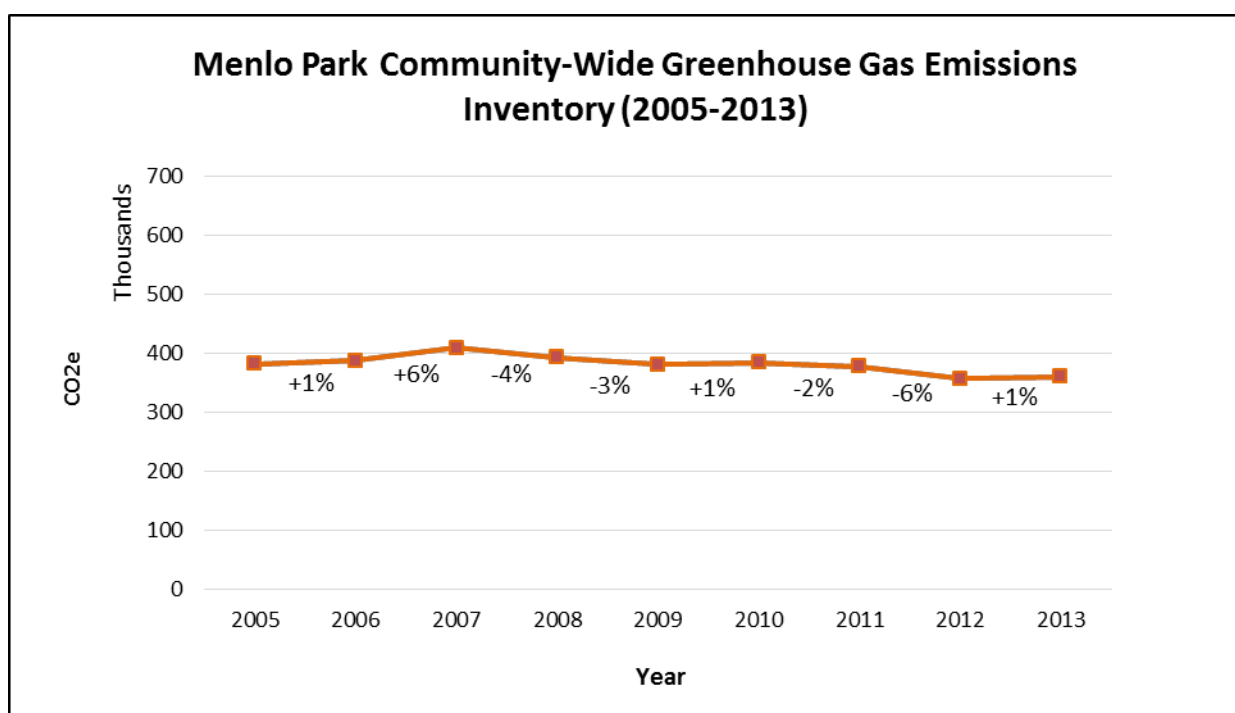
Figure 1 – Previous Menlo Park Climate Action Planning Milestones

Year	Milestone
2005	Green Ribbon Panel – 100+ participants
2005	1st Greenhouse Gas (GHG) Inventory
2008	Approval to develop a Climate Action Plan (CAP)
2009	1st CAP drafted and approved
2011	CAP update
2013	CAP update and adoption of 27% GHG reduction goal from 2005 levels by 2020
2014	CAP update

Community-Wide Greenhouse Gas Inventory Results Between 2005 and 2013

Using ICLEI's (Local Governments for Sustainability) updated Clean Air and Climate Protection (CACP) Software, Menlo Park was able to complete greenhouse gas inventories between 2005 and the current inventory using the most current available data for 2013. GHG emissions were measured from building energy usage, solid waste sent to the landfill, estimated fuel consumption, and methane produced from a closed landfill (Bedwell Bayfront Park) in Menlo Park.¹ Figure 2 shows the annual trend in community-wide greenhouse gas emissions from all sources combined, while Figure 3 shows Menlo Park's inventory for 2013 broken down by source.

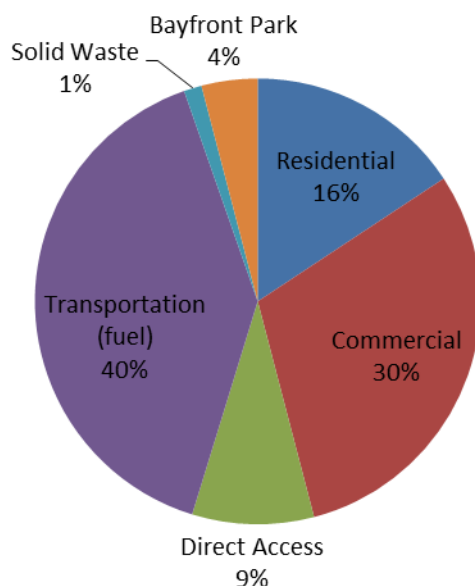
Figure 2 – Community-Wide Greenhouse Gas Emission Inventory 2005-2013



For reference, GHG emission can also be expressed as carbon dioxide equivalents (CO₂e). The trends show GHG emissions going up or down slightly each year, based on factors such as the PG&E energy emissions factors, economic growth or decline.

¹ Energy data obtained from PG&E. Transportation calculated using total gasoline sales data provided by Menlo Park's Finance Department with an assumption that 95% of sales are fuel sales, and applying the average cost per gallon of gasoline in California from the California Energy Almanac produced by the California Energy Commission. Solid Waste Data obtained CalRecycle, and Bayfront Park data was provided by Fortistar, contracted operator of the landfill. *Final CO₂e count being verified by staff, direct access figures are under review as of 7/15/15.

Figure 3 – 2013 Menlo Park Community-Wide Greenhouse Gas Emissions by Source



In 2013, the City of Menlo Park's community-wide emissions totaled 360,427 tons of CO₂e. Appendix B shows the GHG emissions attributed directly to City of Menlo Park operations, which are a small portion of Menlo Park's overall GHG emissions.

Emissions from electricity and natural gas use in the residential sector totaled 16%, followed by commercial customers at 30%, and Direct Access energy users at 9%. Emissions from transportation (fuel purchases) totaled 40%, followed by the closed Bayfront Park landfill at 4% and solid waste at 1%.

When compared to Menlo Park's 2012 community-wide inventory (356,521 tons) there is a 1% increase in emissions. This one percent increase can be attributed to the following community trends:

- Increase in energy consumption in both the residential and commercial sectors. For example, there was a 3.4% increase in residential energy use and 5.5% increase in commercial energy use from 2012-2013.
- Increase in development projects occurring in Menlo Park, which can be seen in the differences in finalized building permits for new construction that went from 78 building permits in 2012 to 117 in 2013, a 50% increase over 2012.
- In 2012, the former Sun Microsystems corporate campus was not occupied by Facebook as re-modeling was occurring at the site. In 2013, Facebook moved 6,500 employees to the former Sun Microsystems campus. Facebook has submitted plans for campus expansion which will

roughly triple its current size by 2020. Rebuilding and infill new construction in the residential and commercial sector are expected to result in continued rise in energy demand in Menlo Park for several years to come.

- PG&E emission factors slightly increased from 0.4440 lbs. CO₂/kWh to 0.4990 lbs. CO₂/kWh between 2012 and 2013

The current trend will not meet State AB 32 goals to reduce emissions to 1990 levels by 2020 and 80% below 1990 levels by 2050, unless significant local policies and programs are implemented to achieve this statewide goal. The next section provides an overview of strategies that Menlo Park will review and potentially implement over the next five years.

Recommendations for Greenhouse Gas Reduction Strategies Between 2015 and 2020

The following list of measures, in Figure 4, are recommended community and municipal strategies to aid in meeting Menlo Park's GHG emissions reduction targets. Additional measures may be needed at the international, national, statewide, and local level in order to fully reach Menlo Park's climate action goals.

Figure 4 – Menlo Park Five Year Community GHG Reduction Strategies 2015-2020

Fiscal Year 2015-16

- Complete installation of Solar PV on four City buildings
- Complete installation of four Electric Vehicle (EV) Charging stations at City public parking locations
- Incorporate CAP strategies and GHG emission reductions into General Plan update
- Complete energy efficient upgrades and renewable energy installation at city facilities
- Consider Community Choice Energy (CCE) options to gain additional renewable power in MenloPark's portfolio
- Complete evaluation of methane capture and treatment at Bedwell Bayfront Park (Closed Landfill)

Fiscal Year 2016-17

- Incorporate Zero Net Energy and LEED Silver requirements into Planning requirements and Building Codes to increase efficiency in new buildings
- Implement Energy Star ratings requirement, or other performance tracking methodology, into Planning requirements for new buildings
- Consider changes to City's solid waste, recycling, and organics collection franchise that encourage zero waste and decrease waste to landfill
- Consider developing an energy efficient/renewable energy plan for commercial and residential sector to re-invigorate energy upgrades for existing buildings
- Re-invigorate a social marketing program to increase biking, public transit, and walking in the community
- Implement CCE, if selected as an option

Figure 4 – Continued

Fiscal Year 2017-18

- Support Transportation Commission's car sharing program
- Support Bicycle Commission's bike sharing program
- Consider program to increase Caltrain ridership by downtown employees
- Encourage local food production through social marketing, education, and community garden programs
- Consider large scale renewable energy generation within Menlo Park (such as solar farm on a portion of open space, or large number of solar roof-top installations)

Fiscal Year 2018-19

- Revisit City Environmental Purchasing Program (EPP) to consider requiring new City buildings, facilities, and vehicles meet certain minimum environmental attributes
- Revise 2004 City Street Tree Master Plan, with the support of the City Arborist, to increase urban tree canopy
- Consider fuel switching strategies to move residential and commercial energy from natural gas and other fuels to renewable electricity portfolio
- Consider consumption based community engagement program to reduce GHG impacts of plug load, food and consumer goods purchased in Menlo Park

Fiscal Year 2019-20

- Consider replacement of all remaining City non-LED street lights with LED fixtures
- Consider height and density limit adjustments to promote active and public transportation
- Consider resiliency strategies for protecting Menlo Park land in the projected Sea Level Rise (SLR) zone
- Robust Climate Action Plan update community engagement program to craft Menlo Park's strategy looking forward to 2040

For All Years 2015-2020:

- Continue implementation of City EPP, residential and commercial water, waste and energy efficiency programs

The above is a recommended timeline only. New policies and programs related to GHG reductions may require a comprehensive cost-benefit analysis. Nearly all policies and programs would require City Council approval prior to implementation. In addition, the five year strategy also reflects what can be accomplished with current staff resources.

Status on Projects Approved by Council from 2014 Update

In April 2014, Council approved of a five-year CAP strategy. The following is the status of projects previously discussed. The projects are listed roughly in the order in which they were originally planned to be implemented. The progress highlights the varied speed in which projects can move forward within the context of the larger City effort.

Planned Implementation FY 2011-12

Participation in Energy Upgrade California	In April 2015, the City, San Mateo County, and Bay Area Regional Energy Network (BayREN) cosponsored a homeowner energy efficiency workshop at the Belle Haven neighborhood center. The workshop was attended by 30 residents. The City continues to conduct outreach regarding energy efficiency opportunities for both residents and businesses, through bill inserts, Facebook, Twitter and NextDoor social media campaigns. The State Energy Watch program provides up to \$4,500 in rebates to homeowners and \$750 per unit to multi-family dwelling owners that complete energy efficient upgrades. City Council approved a rebate program in 2011 that provided partial payment to residents for completing a home energy audit, and full rebate if any recommended energy efficient upgrades are made. According to San Mateo County Energy Watch reports, Menlo Park had the third highest participation rate in the program for the county behind San Mateo and San Bruno. Approximately 25
Status Current, On-Going, with Program Changes	projects were completed in Menlo Park. The City maintains a small fund for energy audit rebates; however, the nearby non-profit agency that offered audits to residents has experienced program changes which have resulted in a reduced number of requests for the funds.
Establish Climate Action Plan Greenhouse Gas Reduction Target	A GHG reduction target of 27% by 2020 from 2005 level was adopted by Council in March 2013.
Status Completed in 2013	
Mandatory Commercial Recycling Ordinance	State-wide mandatory commercial recycling was enacted in 2013 via AB 341 and State-wide mandatory commercial organics recovery was enacted in 2014 via AB 1826, thus removing the perceived need for local ordinances. The South Bay Waste Management Authority (also referred to as SBWMA or RethinkWaste) is taking the lead in publicizing and implementing these laws on behalf of its member agencies, including Menlo Park.
Status Removed	

Energy Performance Contracting and Solar Power Purchase Agreements	Environmental Programs worked with San Mateo County Energy Watch to provide a free energy audit of the City's administration building, and an Energy Management System (EMS) was recommended. The City Council appropriated over \$1M in the Capital Improvement Program (CIP) for FY 2014-15, and FY 2015-16 for the energy efficiency projects at City facilities, these include variable frequency drives, Energy Monitoring Systems (EMS) and new chillers, which are estimated to save 578 tons of CO₂e. On October 6, 2015 the City Council accepted the chillers and variable frequency drives as completed by the contractor. The EMS implementation is underway, thus the project is halfway completed relative to its budget. In 2013, Council also approved participating in the regional renewable energy procurement project (R-REP) to install solar on four city facilities (Arrillaga Gymnasium, Arrillaga Gymnastics Center, Onetta Harris Center, and Corporation Yard). Construction of the solar power facilities is underway and is expected to be completed in November 2015. • The combined solar system sizes equal 390.4 kW • The annual solar output is estimated to be 580,889 kWh
Status Nearing Completion in 2015	• Over the course of the 20 year Power Purchase Agreement (PPA), the City is expected to save over \$461,000 in energy costs (when compared to PG&E), with minimal capital outlay by the City • The installations are estimated to reduce the City's Municipal GHG emissions by 419 metric tons annually, which is equivalent to removing eighty-eight passenger cars from the road every year.

Adopt Environmental Purchasing Policy for City Operations	Implementation and reporting on the results of the policy are still in progress. The City established an Environmental Purchasing Policy (EPP) working group consisting of members from all departments that helped craft the policy, which was adopted in 2014. The committee has not met since adoption due to other city priorities and limited staff resources. Reporting is expected to begin in FY 2015-16.
Status Completed in 2014	

Improve Methane Capture at Bedwell Bayfront Park	Delays are due to expected changes in methane production due to the age of the landfill and unexpected changes in regulatory standards for operating the closed landfill. A consultant was hired to study this issue in FY 2013-14 and a revised plan is expected in 2016.
Status In Progress	

Phase II Sustainable Building Standards Development	Staff anticipates bringing changes to the building code to City Council along with required updates required under the California universal building code, which is updated every three years. Expected completion FY2016-17.
Status In Progress, projected completion FY2016-17	

Planned Implementation FY2012-13

Expand Green Business Certification Program	San Mateo County revived the program using a one-year Climate Fellow staff person in FY2014-15. Menlo Park businesses were certified. City staff helped to publicize the program and the businesses in 2015. Follow up is needed to ensure the County continues the program on an on-going basis.
Status Implemented in FY2014-15	

Maximize Recycling and Composting at all City facilities to a 75% measured diversion rate	Staff has provided outreach on how to properly use the programs to City staff, reporting and follow up are pending additional staff time availability.
Status Current, On-Going	

Consider Adopting Zero Waste Policy	This project is currently planned for the FY2016-17 CIP and would need to coincide with possible Collection Franchise negotiations.
Status Moved to FY2016-17	

Implement Civic Green Building Policy for New City facilities or major renovations	Due to limited staff resources, this project is on hold until the Environmental Purchasing Policy is fully implemented. In 2014 the City's Environmental Purchasing Policy was adopted, additional staff time is needed to complete department level follow up, training and reporting. Environmental staff is planning to assist the City Hall remodeling team in choosing green building materials whenever possible. If the project qualifies, the City may certify the project under the LEED O+M (Operations and Management) framework.
Status On Hold	

Planned Implementation FY2012-13

Car Sharing and Public Transportation Marketing	These projects were de-emphasized in the CAP to reflect the Transportation and Bicycle Commissions as main drivers of these projects, and reduce duplication of effort.
Status Implemented FY 2014-15	

Social Marketing Program for Alternative Transportation	City staff and volunteers implemented a social media campaign for active transportation in 2014 via the transportation division's Facebook and Twitter accounts.
Status Implemented FY 2014-15	Bicycle infrastructure improvements and campaigns to promote active transportation and commute alternatives to single occupancy vehicles were completed by the Bicycle and Transportation commissions and staff in 2014.

Planned Implementation FY2014-15

Consider Electric Vehicle Charging Stations	In 2014 the City won a grant, as part of a regional effort, for EV chargers. Appropriate accessible parking locations for the chargers have been identified and the City is working on estimates for the costs to run electrical conduit and enhanced electrical service to the selected locations. Although the cost of the chargers and the installation of the chargers are covered by the grant, the City will need to contribute approximately \$30,000 to provide the conduit and electrical service upgrades required, and a small number of parking spaces will be lost as a result of accessibility requirements.
Status In Progress	

Recommended Next Steps of GHG Emission Reduction Strategies

This annual update and status report is intended to complete a high level analysis of the City's current GHG emissions and five year reduction strategies and identify new strategies for consideration over the next five years.

For FY2015-16 the City Council Approved \$100,000 in the Capital Improvement Plan (CIP) for Climate Action Plan activities. These funds will be used to pursue the strategies listed in Figure \$ for FY2015-16.

The next recommended steps include:

- City Council review the community and municipal GHG inventories for 2013 (above, accomplished at this meeting).
- Staff to continue to consider and implement strategies identified in the report through the annual Capital Improvement Plan and/or city budget process.
- EQC to advise staff and City Council regarding updates to the General Plan, which will facilitate GHG reductions in the near and long term.
- Staff to track statewide changes, such as Governor's Executive Orders, which impact the City's Climate Action Planning.

Appendix A – Previous Menlo Park Climate Action Planning City Council Reports

Council Report	Date	Action
07-075	5/1/2007	Adoption of a resolution appropriating \$35,000 from the General Fund Reserve for consultant and staff costs to conduct a Greenhouse Gas Emissions Inventory and authorizing the City Manager to enter into a contract for \$24,100 with ICLEI – Local Governments for Sustainability to conduct the inventory, and adoption of a resolution endorsing the U.S. Mayors Climate Protection Agreement, as modified. (Staff Report #07-075)
08-031	3/4/2008	Receipt of updates to the Menlo Park Greenhouse Gas Emissions Inventory Analysis; approval of a resolution authorizing the City Manager to execute a grant agreement in the amount of \$25,000 with the Bay Area Air Quality Management District for developing a Climate Action Plan and to execute a contract in the amount of \$30,600 with ICLEI-Local Governments for Sustainability to develop a Climate Action Plan; and appointment of a Council Member to the Core Team for planning. (Staff Report #08-031)
08-039	3/25/2008	Consideration of purchasing offset credit for Greenhouse Gas Emissions from City operations through the PG&E Climate Smart Program (Staff Report #08-039)
08-040	3/25/2008	Core Team for drafting the Climate Action Plan (Staff Report #08-040)
08-048	4/22/2008	Adopt the Climate Action Assessment Plan Report and authorize use of remaining funds from the Green@Home contract with Acterra to provide additional energy efficiency incentives that would increase Menlo Park's participation in the regional Energy Upgrade California Program (Staff report #11-128)
13-051	4/2/2013	Provide direction on the Climate Action Plan Update and Status Report, new measuring methodology for transportation greenhouse gas emissions, and a community greenhouse reduction target, and provide direction on funding in order to achieve target. (Staff report #13-051)
14-113	06/17/2014	Receive annual community greenhouse gas inventory information and approve updated five year Climate Action Plan strategy (Staff report #14-113)
14-115	06/17/2014	Approve a resolution authorizing the City Manager to execute an agreement with the Bay Area Climate Collaborative, ABM, and ChargePoint to install four electric vehicle charging stations in Menlo Park with grant funds from the California Energy Commission (Staff report #14-115)
14-178	10/07/2014	Approve a resolution making findings necessary to authorize an energy services contract for Power Purchase Agreements (PPA) at the Arrillaga Gymnasium, Arrillaga Gymnastics Center, Onetta Harris Center, and City Corporation Yard; authorize the City Attorney to finalize the agreement and authorize the City Manager to execute the agreement; and amend the existing consulting contract with Optony, Inc. to include construction management services (Staff report #14-178)

Appendix B - City of Menlo Park Municipal Operations GHG Emissions

The City of Menlo Park conducted the following Municipal GHG Inventory in 2009, which showed an increase in GHG of 594 tons due to expansion of City infrastructure/facilities and changes in emissions factors. The 2009 Municipal Inventory has not been officially updated; however, the City has tracked information reflecting the municipal energy saving projects conducted with the support of PG&E. The projects which were completed in 2010 through 2013 provide a GHG savings of 100 tons (a number of additional projects were conducted; however, they were not counted in this calculation, because the year of completion has not been established).

In addition, the City Council has approved the following municipal energy-efficiency related projects, which are in progress, and are expected to save an additional amount of more than 578 tons of GHG:

October 2014:

- Project: Approved \$64,272 in funding to install variable frequency drive systems at the Burgess Park and Belle Haven Park pools.

Estimated annual CO₂e reduction: 38 tons Status: in progress

- Project: Approved four Power Purchase Agreements (PPA) with Cupertino Electric as part of the Regional Renewable Energy Procurement Project (R-REP) with Alameda County to install solar PV systems on municipal buildings (rooftop and solar carport). Solar will be installed on the Arrillaga Family Gymnasium, Arrillaga Family Gymnastics Center, City Corporation Yard, and Onetta Harris Community Center.

Estimated annual CO₂e reduction: 419 tons Status: completion November 2015.

April 2015 (For the City's Administrative Building and Library):

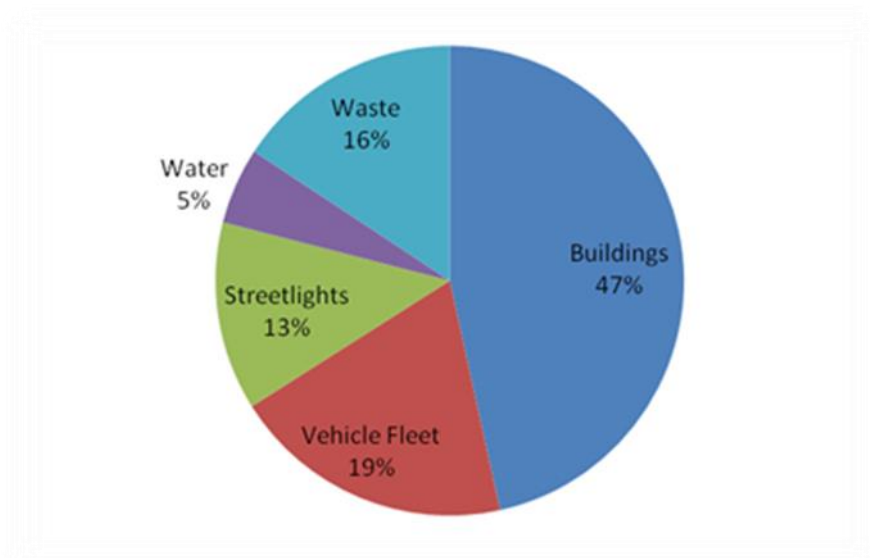
- Project: Approved \$375,000 in funding to purchase a new Energy Monitoring System

Estimated annual CO₂e reduction: 120 lbs Status: in progress

- Project: Approved \$606,160 in funding to purchase new chillers and variable frequency drives.

Estimated annual CO₂e reduction: 121 tons Status: Completed October 6, 2015

Municipal Operations Greenhouse Gas Emissions Inventory 2009 By Source (2,889 tons CO₂e)



Emissions from the City are embedded within the community-wide totals. Government operations are therefore a subset of total community emissions. In the year 2009, the City of Menlo Park's municipal operations generated 2,889 tons of CO₂e, which constitutes 0.004% of the community's total greenhouse gas emissions. This is a 25% increase compared to 2005 total emissions (2,305 tons).

Electricity and natural gas use in the City's buildings contributed to 47%, the vehicle fleet contributed 19% of this total, and the remainder of CO₂e came from streetlights, waste, and the electricity for pumping water and storm water.

Municipal Buildings - Electricity and natural gas use in the City's buildings contributed to 47% of CO₂e from municipal operations. This is up 14% compared to City buildings contributing 33% of CO₂e toward municipal operations in 2005. This increase can be attributed to a couple reasons; PG&E's greenhouse gas CO₂ emission rates for electricity increased from KWh x (0.489 lbs/kWh / 2,204.6 lbs/metric ton) in 2005 to KWh x (0.641 lbs/kWh / 2,204.6 lbs/metric ton) in 2009. The increase in emissions rates means that each kWh consumed in 2009 contributed approximately 31.1% more CO₂ than in 2005. Another reason for the increase in fuel and electricity consumption from municipal buildings is the construction of new buildings from 2005-2009.

Vehicle Fleet - In 2009, Menlo Park's municipal vehicle fleet is responsible for the second largest share of overall municipal emissions at 19%. Compared to 2005's 28.4%, this is a 9.4% reduction. Menlo Park's vehicle fleet consists of analyzing the fuel consumed by City vehicles and equipment, such as police vehicles, and the tractors used for landscaping

Streetlights - The energy consumed by the City's street lights accounted for 13% of municipal operations greenhouse gas emissions in 2009. This analysis included the energy consumed by streetlights, traffic signals, park lighting, decorative lights, and parking lot lights. Compared to 2005's 11.9%, this is a 1.1%

increase. This increase can be attributed to the addition of more streetlights, including signal cameras added throughout the city in 2008.

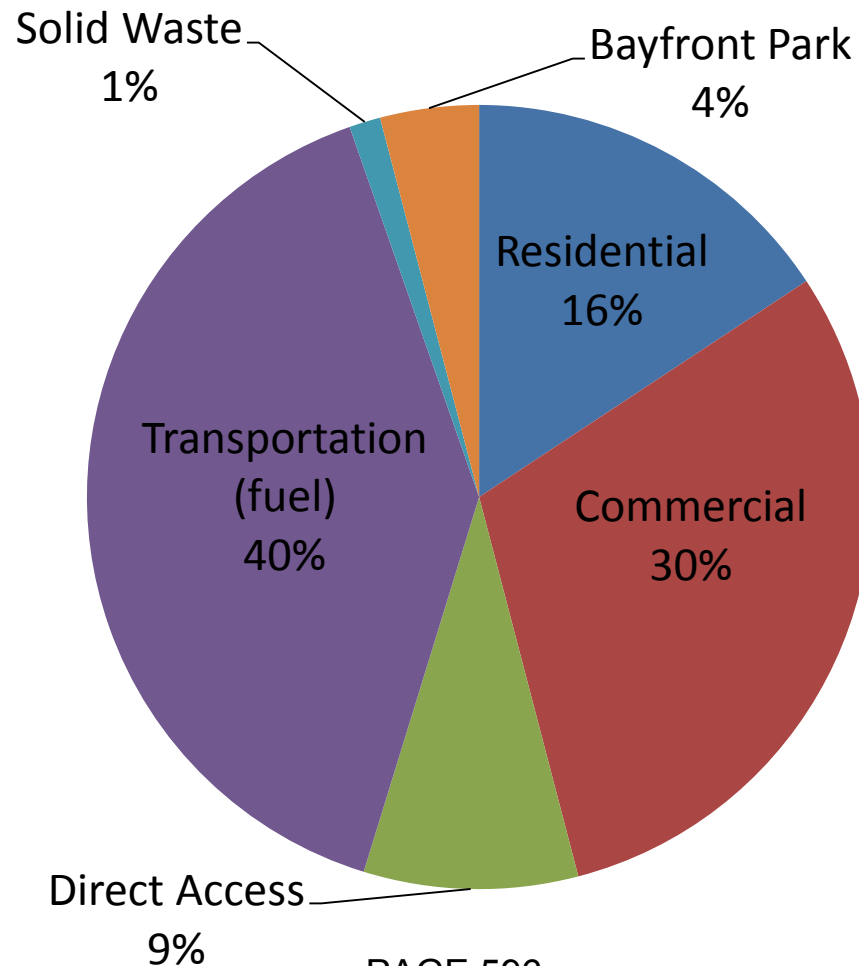
Water/Sewage - The emissions resulting from the energy used to pump water and waste water remained the same at 5% in 2005 and 2009. This analysis excludes pumping and treatment of wastewater that is carried out by the West Bay Sanitary District (WBSD), East Palo Alto Sanitary District (EPASD), and the South Bayside System Authority (SBSA).

Waste - In 2009, the relative contribution of landfilled waste from municipal operations to greenhouse gas emissions is 16%. Compared to landfilled waste contributing 20.8% to municipal operations in 2005, there is a 4.8% decrease. This decrease can be attributed to the reduction of solid waste sent to the landfill from year to year.

CLIMATE ACTION PLAN UPDATE AND STATUS REPORT

City Council Meeting October 20, 2015

2013 Menlo Park Community-Wide Greenhouse Gas Emissions by Source



Improvements from 2012 to 2013

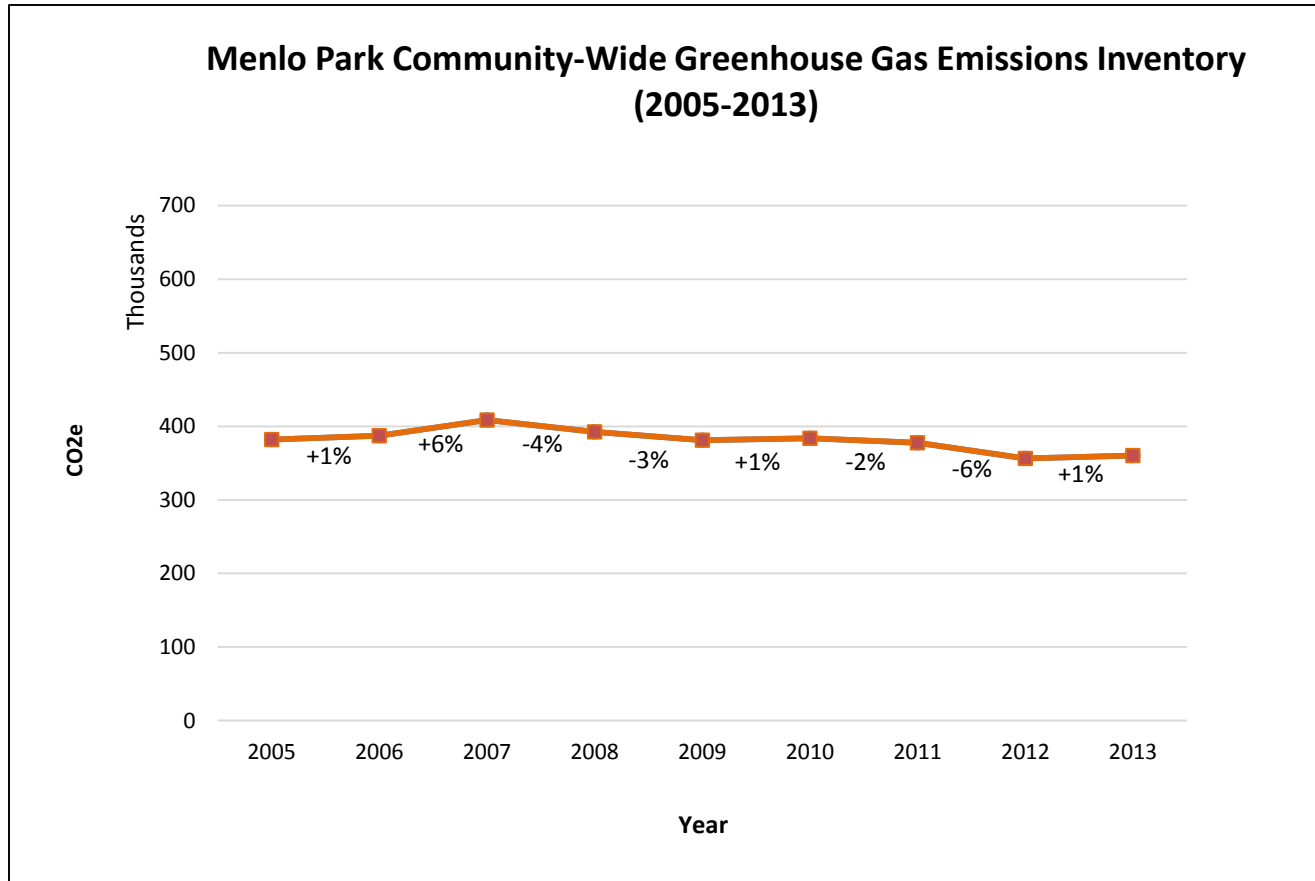
- Transportation Sector ↓0.6%
 - ▣ Reduction of 104,552 gallons fuel consumed
- Solid Waste Sector ↓1.2%
 - ▣ Reduction of 10,321 tons solid waste landfilled
- Methane at Bedwell Bayfront Park ↓15.5%
 - ▣ Gas reduces over time (closed landfill)
 - ▣ New burner technology installed in 2013

Changes from 2012 to 2013

□ Energy Sector

- Residential energy use ↑ 3.4%
- Commercial energy use ↑ 5.5%
- New construction ↑ 50%
- Facebook + 6,500 employees
- PG&E emission factor ↑
(from 0.4440 lbs. to 0.4990 lbs. CO₂/kWh)

Greenhouse Gas Emissions



Planned Strategies FY2015-16

- Complete City Solar Project
- Install four EV Charging stations
- Incorporate CAP strategies and GHG emission reductions into General Plan
- Complete energy efficient upgrades at city facilities
- Consider CCE options
- Methane capture and treatment at Bedwell Bayfront Park

Planned Strategies FY2016-17

- ❑ Zero Net Energy, LEED Silver, Energy Star Planning requirements or Building Codes
- ❑ Update City Franchise Agreement with Recology
- ❑ Develop an energy efficient/renewable energy plan for existing buildings
- ❑ Re-invigorate social marketing to increase biking, public transit, and walking in the community
- ❑ Implement CCE, if selected as an option



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**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-163-CC****Informational Item:****Update on Peninsula Clean Energy, a Community Choice Energy effort sponsored by San Mateo County****Recommendation**

This is an informational item and does not require City Council action.

Policy Issues

The Menlo Park 2015 Climate Action Plan, included in this meeting's agenda, describes a number of programs that are planned in order to meet the City Council adopted target of 27% reduction in greenhouse gas (GHG) by 2020 from 2005 levels. One of the most significant programs is Community Choice Energy (CCE), because CCE has the possibility of significantly reducing the GHG emissions associated with electricity use throughout Menlo Park, without requiring building or behavior changes. CCE would provide the largest single contribution to reducing Menlo Park's GHG emissions.

If the City decides to participate in San Mateo County's CCE, future Council action will be needed to:

- Join the Peninsula Clean Energy (PCE) Joint Powers Authority (JPA) that will direct the CCE
- Adopt an ordinance to implement the CCE for Menlo Park

Background

San Mateo County (SMC) Office of Sustainability has been organizing efforts to initiate a San Mateo countywide Community Choice Energy (CCE) option, which could reduce Greenhouse Gas (GHG) emissions from energy sources.

Through a CCE option, residents and businesses will receive electrical power purchased through the CCE and delivered through the Pacific Gas & Electric (PG&E) grid. CCEs by their nature are opt out process, so all customers will participate, unless they opt out to stay with PG&E purchased power. Because the electrical grid maintenance and billing would continue to be provided by PG&E, customers typically do not observe differences in CCE versus traditional energy delivery, frequently characterized as "the biggest change you will never notice."

State Law and Precedent

In 2002, the State of California enacted AB 117, which enabled Community Choice Aggregation (CCA), also known as CCE. This enables local governments individually or together in a JPA to purchase energy which will then be fed onto the distribution grid. In Menlo Park and San Mateo County electricity and natural gas is distributed by the Investor Owned Utility (IOU), PG&E.

SMC CCE Efforts to Date

SMC plans to fund the costs for PCE start up. In the future, SMC anticipates recouping its costs as part of the PCE rate structure.

The SMC Office of Sustainability established a CCE Community Advisory Committee (CAC) in May 2015, on which Mayor Carlton has served as a member and Heather Abrams, the City Environmental Programs Manager, has attended as an alternate. In September 2015, SMC released its draft technical feasibility study on the CCE, which estimates GHG reductions and costs for three levels of renewable electrical power. The study provides enough information for the City to begin considering SMC's CCE option, called PCE.

SMC has been providing outreach to the public regarding PCE and once a JPA is formed and the member agencies adopt their CCE ordinances, PCE will provide outreach to the public regarding its services and opt out options.

Additional information regarding PCE can be found at: <http://green.smcgov.org/community-choice-energy>

Analysis

PCE Draft Technical Feasibility Study Results

PCE's draft technical study was released in September 2015 to better understand and explain the benefits and liabilities of forming a CCE. The study states that PCE will be financially viable, and includes a cost benefit analysis for the entire PCE, a sensitivity analysis to show the range of rates for each of three scenarios, and a risk analysis.

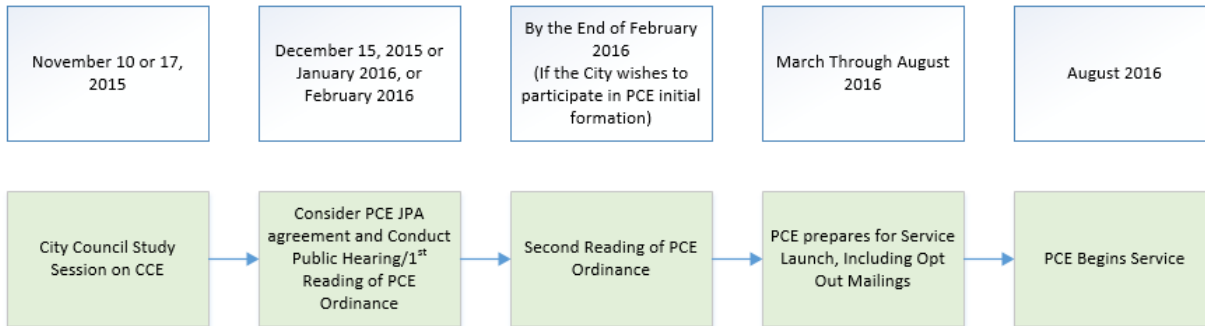
SMC would like to schedule study sessions with each City Council within the County to widen the discussion regarding PCE. SMC has set a tentative deadline for Cities to join the PCE JPA and adopt the PCE ordinance by the end of February 2016 to be an initial member. Once the initial member Cities join PCE, they will form the JPA Board and determine the policies of PCE. Staff is currently working with SMC to determine if there is flexibility in this deadline.

For any cities that do not meet the February deadline or opt not to participate in PCE formation, there may be an opportunity to join at a later date. However joining later may require a fee to join. Cities that join later will have less influence over the formation of PCE, but they will join with a clearer understanding of the services and rates PCE will ultimately offer. Once PCE formation is complete, PCE will conduct required noticing to customers regarding the opt out period and then begin providing service.

Menlo Park EQC Consideration of CCE

In the City of Menlo Park, the Environmental Quality Commission (EQC) has been investigating CCE options, including a number of presentations from local non-profits regarding CCEs. In August 2015, the EQC hosted a presentation on CCEs by Jim Eggemeyer, SMC Office of Sustainability Director. In September 2015, the EQC had a presentation from PG&E to understand the "base case" of renewable power portfolio options that PG&E provides.

The graphic below shows a timeline of next steps for the City in considering PCE in order to participate in the formation of the PCE.



Report prepared by:
Heather Abrams, Environmental Programs Manager

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STAFF REPORT

City Council

Meeting Date:

10/20/2015

Staff Report Number:

15-159-CC

Informational Item:

Initiation of a Community Wide Survey by Godbe Research

Recommendation

Staff recommends the Council receive the following plan for initiation of a community survey to be conducted by Godbe Research in November and December, 2015, with results presented in time for consideration in the annual Council Goal Setting Process in January, 2016.

Policy Issues

The City Council has previously approved and engaged in Community-Wide Surveys of residents to evaluate overall perceptions of living in Menlo Park, quality of life, satisfaction with performance in providing services and programs, and to gather resident feedback on specific issues. The Community Survey has been a helpful tool for informing the Council's annual goal setting process and in support of numerous policy decisions, including the City Budget. Council members are encouraged to let the City Manager know of any policy topics they would like included in the upcoming survey.

Background

The City of Menlo Park began doing statistically valid community surveys in the early 1990's. Most recently, beginning in 2008, the City utilized the International City Management Association (ICMA) sponsored National Citizen Survey, which was repeated in 2010 and 2012. Results of the surveys were made available to the community on the City's web site and used by Departments for planning and decision making and were presented to Council for use in annual goal setting sessions.

Analysis

With the increase in smart phone proliferation and the elimination of "land lines" from many households, telephone survey response rates have declined in recent years. The National Citizens Survey used by Menlo Park in previous years was a mail-in instrument and had several disadvantages, including providing less random and statistically valid results because the sample was less self-selective and generally reflective of English-speaking older residents. Given these issues, staff determined that a telephone survey with a live person administering it has room for some flexibility in the manner and order of the questions. The survey caller also can guide respondents through any questions that might not be understood and quality control is generally better because a handful of trained individuals are entering the answers.

Several other area communities, including Mountain View, San Carlos, San Mateo and Redwood City, have used Godbe Research and their “hybrid” survey methodology which, while competitive in cost with the National Citizens Survey, leverages response technologies preferred by certain age groups and includes both internet and telephone survey responses. Godbe conducts an internet survey of registered resident voters (typically ages 18 to 49) and then uses a telephone survey to round out demographic and geographic quotas to match community census data. The voter sample list includes residents’ self-reported primary phone number, allowing efficient phone solicitation rather than random digit dial of “land lines.”

Godbe has proposed an eight to ten week time frame for the survey, with data collection beginning in early November and December and presentation of results to Council in mid-January or in conjunction with the annual goal-setting process. Staff is proposing using the month of October to work with Godbe on development of the survey instrument and invite Council input on issues or topics to include during this development phase. There is adequate funding in the City Manager’s Office budget to cover the \$29,000 cost of the survey.

Public Notice

Public Notification was achieved by posting the agenda, with the agenda items being listed, at least 72 hours prior to the meeting.

Attachments

A. No attachments for this item.

Report prepared by:

Cherise Brandell, Community Services Director

**STAFF REPORT****City Council****Meeting Date:****10/20/2015****Staff Report Number:****15-157- CC****Informational Item:****Initiation of Community Engagement Supporting
2015-16 Capital Improvement Projects for Parks****Recommendation**

Staff recommends the City Council receive the following plan and meeting dates for community engagement processes in support of upcoming 2015-16 Capital Improvement Plan projects (CIP) in Jack Lyle, Nealon and Willow Oaks Parks.

Policy Issues

The City Council has previously approved CIPs for the current and past fiscal years that include projects at three City Parks. It is City Council's policy to engage residents in helping to define specific aspects of park improvement projects through community meetings and other input methods. The proposed engagement plans support this Council policy.

Background

Recent staffing increases in Public Works have allowed us to begin moving forward with three Council-approved CIP projects, including:

1. Constructing restrooms at Jack Lyle Park;
2. Relocating the dog park at Nealon Park and replacing the sports field there; and
3. Renovating the dog park at Willow Oaks Park.

Thanks to additional staffing supported by City Council in the current year's budget, capacity is available to move these projects forward, beginning with community engagement this fall, design and community review this winter, development of specs and bidding this spring and construction next summer and fall. The Parks and Recreation Commission will also review this proposed schedule and outreach approach for the community engagement process to occur this fall.

Analysis**Jack Lyle Park Restrooms**

Located directly adjacent to Rosener House in a residential neighborhood, Jack Lyle Park is utilized extensively by field user groups during February to June and from mid-August to mid-December on weekdays from 4:00 p.m. to dark and 9:00 a.m. to 5:00 p.m. on weekends. There are approximately 50 park users per day on weekdays and 400 per day on weekends. These numbers do not include casual park users taking advantage of other amenities in the park. During this time of heavy usage, user groups

have rented portable toilet facilities to accommodate children and their families. These have been available only to the user groups and are not accessible to other park users during other days and times.

The Jack Lyle Restroom Project has been in the City's CIP for a number of years. This project has been in high demand particularly by two of our approved field user groups and soccer organizations – AYSO and the Alpine Strikers. Additionally, during their park tour in July 2014, the Parks and Recreation Commission identified the need for permanent restrooms at the park not only for field user groups but for casual park users. The Commission was supportive of a broad community engagement process that included field users, nearby residents, and area-wide residents that may frequent the park.

Staff initiated a community survey in October 2014 that included a mailed survey notice to all residents within a 500 square foot radius of Jack Lyle Park (over 400 residents). Additionally, the three major field user groups were also contacted to complete the survey. Of the 389 respondents to the survey, 94% were in favor of adding restroom facilities to the park. Residents also rated various restroom amenities in the survey. Given the overwhelming support for the restroom project, staff feels it is appropriate to schedule a community meeting related to the restroom project, sometime in early November, for the purpose of informing interested residents and users of the proposed location (driven by access to utilities and to minimize impact to playing areas) and gathering feedback on amenities to be included in the restroom building and conceptual design. The meeting would also provide an opportunity for those with concerns about the restroom project to share those with the designers and with staff. **Staff is suggesting a community meeting at the Arrillaga Recreation Center on Tuesday, November 10 from 6-7 p.m.**

Relocating the dog park at Nealon Park and replacing the sports field

Nealon Park's 9 acres, that includes picnic areas, playgrounds, tennis courts, a softball field, restrooms and open space, are among the city's most popular destinations with activities for all. Since 2005, the softball field has also served as a dog park Monday through Friday from 8am to 10am. The park is utilized extensively by field user groups during the months of February to June and from mid-August to mid-December on weekdays from 4:00 p.m. to dark and also 9:00 a.m. to 5:00 p.m. on weekends. There are approximately 50 park users per day on weekdays and 400 per day on weekends, with more than 5000 hours of sports field use.

As a part of their park tour in July 2014, the Parks and Rec Commission identified concerns related to the joint use of the softball field as a dog park and noted the ongoing field condition issues. The City Council agreed the joint use field was not optimal for either user group when they approved the CIP project to create a separate dog park in the fall of 2014. Staff is proposing an Open House format meeting in early November related to the dog park relocation project for the purpose of informing interested residents and users of the proposed location on the open area between Little House and the playground, and gathering feedback on amenities to be included in the dog park and other elements of conceptual design. The meeting would also provide an opportunity for those with concerns about the project to share those with the designers and with staff. Staff is suggesting a community meeting at Little House on Tuesday, November 10 from 7-8pm immediately following the Jack Lyle Park meeting. A post card announcing the meeting and referring people to an online concept drawing and survey form will be mailed to area residents the last week in October.

Community engagement meetings related to the Softball field replacement project would likely happen

early next fall, following completion of the Dog Park Relocation project.

Willow Oaks Dog Park

Located adjacent to the Willow Oaks Elementary School, this 2.6 acre park includes open field space for soccer and other sports, tennis courts, playground and comfortable meeting spots for neighborhood residents. The dog park at Willow Oaks was built in 2005 and sees regular heavy use during its open hours seven days per week from 7am – 9am and 4pm to dusk. Staff assume a more streamlined community input process for the Willow Oaks Dog Park renovation will be sufficient, including an Open House style community meeting to provide input on desired amenities and conceptual designs as well as a meeting announcement that includes a link to a survey designed to gather similar input. Staff suggests that the meeting be held on November 17 at the Arrillaga Recreation Center from 6pm – 7pm. Given the Commission's interest in also including a restroom at Willow Oaks Park, staff will also gather community input on that proposal for a future CIP.

Public Notice

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Attachments

- A. Jack Lyle Park CIP description, Nealon Dog Park Relocation CIP description, Willow Oaks Dog Park Renovation CIP description

Report prepared by:

Cherise Brandell, Community Services Director

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Parks & Recreation

JACK LYLE PARK RESTROOM CONSTRUCTION

This project will involve engaging the neighboring community in developing a conceptual design, then constructing restrooms at Jack Lyle Park.



FUNDING SOURCE	2015-16	2016-17	2017-18	2018-19	2019-20	TOTAL
Rec In lieu	40,000	200,000	—	—	—	\$240,000
Subtotal	\$40,000	200,000	—	—	—	\$240,000

LIBRARY LANDSCAPING

The project consists of replacing the landscaping and irrigation system around the library. The existing landscaping and irrigation system is in need of major upgrades and a portion of the system is over thirty years old.



FUNDING SOURCE	2015-16	2016-17	2017-18	2018-19	2019-20	TOTAL
Rec In lieu	200,000	—	—	—	—	\$200,000
Subtotal	\$200,000	—	—	—	—	\$200,000

Parks & Recreation

RELOCATION OF DOG PARK AT NEALON PARK

This project will consist of re-locating the Nealon Park Dog Park from the baseball field to another area within Nealon Park.



FUNDING SOURCE	2015-16	2016-17	2017-18	2018-19	2019-20	TOTAL
Rec In Lieu	250,000	—	—	—	—	\$250,000
Subtotal	\$250,000	—	—	—	—	\$250,000

WILLOW OAKS DOG PAK

This project will included a scoping and design phase in fiscal year 2014-15, then construction in fiscal year 2015-16 of upgrades and replacement at the Willow Oaks Dog Park.



FUNDING SOURCE	2015-16	2016-17	2017-18	2018-19	2019-20	TOTAL
Recreation In-Lieu	250,000	—	—	—	—	\$250,000
Subtotal	\$250,000	—	—	—	—	\$250,000