

**TO:** James L. App, City Manager

**FROM:** Doug Monn, Director of Public Works

**SUBJECT:** Update of Standard Details and Specifications, Stormwater Regulations

**DATE:** February 18, 2014

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**Needs:** That the City Council update Standard Details and Specifications for public works construction to implement stormwater regulations as directed by the Water Board.

**Facts:**

1. The Standard Details and Specifications provide written specifications and detailed drawings to establish standards of tolerance and quality for public and private construction projects. This publication was last updated and adopted by the City Council in June, 2012.
2. In February, 2013, the State Water Board updated their state-wide Municipal Phase II Stormwater Permit affecting the submittal of plans and the implementation of erosion and sediment control on all construction sites. Those new requirements went into effect on July 1, 2013.
3. On July 12, 2013, the Central Coast Regional Water Quality Control Board adopted post-construction stormwater management requirements establishing numeric specifications for storm water quality related to the design of all new development in the Central Coast Region. These specifications are to be implemented by each municipality in the region by March, 6, 2014.
4. In July 2013, the City Council adopted a Storm Water Quality Control Ordinance referencing the Standard Details and Specifications as the City's document for implementing the Water Board's mandates for post-construction stormwater management related to the design of new development.
5. In August 2013, the City Council adopted the revised Grading Ordinance which included the new erosion and sediment control requirements and referenced the Standard Details and Specifications.
6. Updated Standard Details and Specifications are presented incorporating both erosion and sediment control requirements and post-construction stormwater management requirements as mandated by the Water Board.

**Analysis  
and**

**Conclusion:** The Standard Details and Specifications provide written specifications and detailed drawings to establish standards of quality for public works construction. In this case, the Standard Specifications are the appropriate platform to implement regulations handed down from the Water Board affecting both design and construction methodology associated with public works construction and private development.

The February, 2013, adoption of the state-wide Municipal Phase II Stormwater Permit affects the process of the submittal and implementation of erosion and sediment control measures on all construction projects, public and private. New measures went into affect on July 1, 2013. The language we include in our Standard Specifications catches up with procedures we have been enforcing in the field and reflects the provisions of our 2013 Grading Ordinance.

Post-construction stormwater control measures adopted by the Central Coast Regional Water Board in July, 2013 must be implemented by all agencies in the region by March 6, 2014. Inclusion of these measures in our Standard Specifications is our last step towards full implementation. In addition to updating our Specifications, we have provided a Technical Guide.

The Technical Guide was developed to assist private engineers, architects and developers in the private community to navigate the new regulations. The Technical Guide includes a template for preparation of a Stormwater Control Plan, one of the necessary components of nearly all land development applications. We've been working with interim Low Impact Development (LID) designs the last couple of years. Combined with our recent experience, these tools should help ease the transition to common compliance with the Water Board's regulations.

**Policy**

**Reference:** Central Coast Water Board Resolution No. R3-2013-0032  
Municipal Code Sections 20.20 Erosion and Sediment Control Plan Requirements;  
14:20:250 Post-Construction Measures

**Fiscal**

**Impact:** None

- Options:**
- a. Adopt Resolution No. 14-xx amending Sections III and V of the Department of Public Works Standard Details and Specifications as implementation of new Water Board regulations.
  - b. Amend, modify, or reject the above option.

Prepared by: John Falkenstien, City Engineer

Attachments: (2)

- (1) Amended Sections III and V, Department of Public Works Standard Details and Specifications
- (2) Resolution

### **SECTION III**

## **CONSTRUCTION OBSERVATION AND STORM WATER QUALITY MANAGEMENT**

### **III-1. GENERAL**

Each phase of improvements, constructed to these specifications, must be observed by the City Engineer or a representative of the Public Works Director prior to proceeding with subsequent phases.

The City will observe, as considered necessary, the construction of public improvements required as a condition of approval of any land development or entitlement. Improvements constructed without observation or approval as provided above, or constructed contrary to the direction of the City's representative, will not be accepted.

### **III-2. ACCEPTANCE OF PUBLIC IMPROVEMENTS**

At the completion of construction of public improvements, the design engineer shall submit the following items to the City Engineer:

- 1) Engineer's Improvement Certification
- 2) Soil Testing Reports
- 3) Material Compliance Reports
- 4) Record Drawings
- 5) Other documentation that may be required by the City Engineer to determine satisfactory completion of the project.

All improvements constructed in public right-of-ways established by subdivision maps must be formally accepted by the City Council.

### **III-3. STORM WATER QUALITY**

#### **Water Quality**

This section applies to both public and private projects regardless of size. The purpose of these requirements is to prevent the pollution of storm water runoff and non-storm water discharges from construction projects, regardless of size.

All construction activities shall be performed in a manner that prevents, to the maximum extent practicable, the discharge of any non-storm water discharges and pollutants from entering directly or indirectly the storm water system, and natural waterways.

#### **A. State General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities**

Any construction activity that disturbs one or more acres of land, or disturbs less than one acre but is part of a larger common plan of development or sale, must comply with the State Construction General Permit (CGP). The WDID # or proof of a waiver must be submitted to the City prior to issuance of a grading permit.

The Contractor shall maintain a copy of a Storm Water Pollution Prevention Plan (SWPPP) prepared in compliance with the CGP, on site at all times. The Contractor shall be responsible for implementing, maintaining, and repairing all storm water pollution controls or Best Management Practices (BMPs) described in the SWPPP for the duration of the work.

The project owner will be responsible to the City for any damages to City resulting from failure to make the repairs or properly maintain pollution prevention devices. The Contractor is responsible for submitting an annual compliance certificate to the State Water Board.

## **B. Erosion and Sediment Control**

Erosion prevention techniques are designed to protect soil particles from the force of rain and wind so that they will not erode. These techniques include, but are not limited to such things as construction scheduling, ground cover and plantings, and installation of erosion control matting.

Sediment control measures are designed to capture soil particles after they have been dislodged in order to retain the soil particles on-site. These measures include, but are not limited to silt fences, sediment barriers, and settling or sediment detention basins. Both erosion prevention techniques and sediment control measures have appropriate uses; however, it has been shown that sediment control measures are less effective in preventing soil movement and water quality impacts than erosion prevention techniques.

### **1. Erosion and Sediment Control Plan Submittal**

*A site specific Erosion and Sediment Control Plan (E&SCP) shall be submitted with all grading and building plans regardless of size.*

- Sites less than 1 acre may use the E&SCP template. (See Buildings or Engineering at [www.prcity.com](http://www.prcity.com))
- Sites 1 acre or greater in size must submit an E&SCP in accordance with section 2 below.
- A SWPPP developed pursuant to the CGP may be substituted for the E&SCP. The City will review the sections applicable to erosion and sediment control.
- The E&SCP must be approved in writing by the City Engineer or representative of the Public Works Director prior to the grading or building permit being issued.
- If any part of the E&SCP is revised, it must be approved in writing by the City.

## 2. Erosion and Sediment Control Plan Requirements

The E&SCP shall include:

### a. Narrative

A written narrative shall be included with the grading plan with a signed sheet by the person responsible for the plan preparation. The E&SCP narrative shall include the following:

- A list of applicable environmental permits directly associated with the grading activity
- Contractor information including a 24 hour telephone number of person responsible for erosion and sediment control
- Construction schedule for the entire length of the project
- Description of vegetation and distance to nearest waterways
- Description of critical areas of high erosion potential such as unstable slopes
- Description of erosion control measures of slopes, lots, streets, etc.
- Description of sediment detention basins, including design assumption and calculations
- The rationale used for selecting BMPs including supporting soil loss calculations, if necessary

### b. Site Plan

The site plan shall include the following information:

- Scale, north arrow and legend
- Vicinity map
- Watershed boundaries with project
- Critical areas within or near the project (waterways, channels, steep slopes, etc.)
- Limits of clearing and grading
- Waterway top of bank, delineation of any waterway buffer areas and existing vegetation and any special trees to be fenced and protected
- Location and types of temporary and permanent erosion and control measures
- Site access location
- Signature block for plan preparer

### c. Best Management Practices

Best Management Practices (BMPs) are applied during construction activities to reduce the pollutants in storm water discharges throughout construction. These Construction Site BMPs provide both temporary erosion and sediment control, as well as control for potential pollutants other than sediment. There are six categories of BMPs suitable for controlling potential pollutants on construction sites. BMPs from each of the six categories below, when applicable, shall be included in the E&SCP.

#### 1. Soil Stabilization BMPs

- Preservation of existing vegetation

- Hydraulic mulch
  - Hydroseeding
  - Soil binders
  - Geotextiles, plastic covers and erosion control blankets
  - Wood mulching
  - Earth dikes/drainage swales and ditches
  - Outlet protection/velocity dissipation devices
  - Slope drains
  - Streambank stabilization
2. Sediment Control Practices
- Silt Fence
  - Gravel bag berm
  - Desilting basin
  - Sediment trap
  - Sand bag barrier
  - Check dam
  - Fiber rolls
  - Storm drain inlet protection
  - Street sweeping and vacuuming
3. Tracking Control Practices
- Rock entrance or steel plates with ribs
  - Stabilized construction roadway; and
  - Entrance/outlet tire wash
4. Wind Erosion Control
- All graded surfaces and materials shall be wetted, treated or to prevent dust from leaving the site
  - Stockpiles shall be protected year-round from blowing dust
  - Upon completion of grading the site shall be thoroughly wetted in order to form a crust over the exposed dirt surfaces. Further applications or other methods acceptable to the City Engineer may be necessary if the site is disturbed
5. Source Controls
- Source control BMPs that prevent pollution by limiting or reducing potential pollutants at their source before they come in contact with storm water for the following operations must be in place throughout all grading and construction phases when applicable.
- Vehicle and equipment fueling
  - Dewatering operations
  - Vehicle and equipment maintenance
  - Paving and grinding operations
  - Temporary stream crossing

- Concrete curing
  - Saw cutting
  - Illicit connection/illegal discharge
  - Potable water/irrigation
  - Vehicle and equipment cleaning
6. Waste Management and Materials Pollution Control
- BMPs for the following activities related to waste management and materials pollution control are required to prevent pollution by reducing pollutants at their source, and require a clean, well-kept site.
- Material delivery and storage
  - Material use
  - Hazardous waste management
  - Contaminated soil management
  - Stockpile management
  - Concrete waste management
  - Spill prevention and control
  - Sanitary/septic waste management
  - Solid waste management
  - Liquid waste management

#### **D. Erosion Control and Stormwater Management Manuals**

The following manuals may be used as a reference:

- EPA's Construction Stormwater Runoff Control BMPs  
<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm>
- *2012 CASQA Construction BMP Handbook*  
<http://www.prcity.com/stormwater>

#### **E. Site Inspections**

- During the rainy season (September 1<sup>st</sup> and April 30<sup>th</sup>), all projects must be inspected by a representative of the Public Works Director to ensure all necessary erosion and sediment controls are in place prior to any land disturbance.
- Periodic site inspections shall be performed to ensure compliance with the E&SCP.
- At the conclusion of the project, an inspection will be conducted to ensure that all erosion and sediment control measures that are no longer needed have been removed.

## **F. Contractor Training and Awareness**

- All employees/subcontractors shall be trained on the storm water pollution prevention requirements contained in these specifications.



## **SECTION V**

### **STORM DRAINS, STORM WATER QUALITY, AND WATERSHED PROTECTION**

#### **V-1. GENERAL**

It is the general purpose of these standards that storm water be contained and treated on the area to be developed. Adjacent improvements, existing or planned, will be free from flood hazard and will not receive a greater volume and intensity of storm water runoff than pre-existing conditions. Flood hazard is defined as potential damage by water having sufficient depth or velocity to damage improvements or to deposit or scour soil.

These specifications are intended to meet the requirements of the National Flood Insurance Program, the City's Flood Plain Ordinance, and the City's Storm Water Management Plan. These specifications reflect numeric storm water control criteria adopted by the Water Board on July 13, 2013 (including subsequent revisions) and modified as specifically applicable to the City of Paso Robles.

The lowest floor of any project that is located within a Special Flood Hazard Area and shown as an A, AE, AH or AO Zone shall be elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the Flood Insurance Rate Map (FIRM) by at least one foot, or elevated at least three feet above the highest adjacent grade if no depth number is specified.

Upon completion of a structure in a Special Flood Hazard Area, the elevation of the lowest floor including basement shall be certified by a registered professional engineer or land surveyor, and verified by the city building inspector to be properly elevated. Such certification or verification shall be provided to the City Engineer.

Modification of a flood-plain shall be accomplished in accordance with Federal Management Emergency Management (FEMA) regulations and the City's Floodplain Ordinance. The design engineer shall provide all data necessary for a Conditional Letter of Map Amendment (CLOMA) and a final Letter of Map Amendment (LOMA).

These standards are intended to provide general design criteria. Most design details are left to the responsibility of the consultant. The design standards contained herein are minimal and alternates may be approved, provided such alternates are to a higher standard than those set forth. Exceptions to these standards may be allowed by the City Engineer when it can be determined that such exceptions are in the best interest of the City.

## **A. Post-Construction Storm Water Quality and Watershed Protection**

Reference Attachment 1 of Resolution No. R3-2013-0032 of the California Regional Water Quality Control Board, Central Coast Region adopted July 12, 2013 for definitions associated with the requirements outlined below.

### **(1) Applicability**

Performance requirements apply to all projects that create or replace greater than 2,500 square feet (sf) of impervious surface including:

- Removing and replacing a paved surface resulting in alteration of the original line and grade, hydraulic capacity, or overall footprint of the road
- Extending the paving edge or paving graveled shoulders
- Resurfacing by upgrading from dirt to asphalt, or concrete; upgrading from gravel to asphalt, or concrete; or upgrading from a bituminous surface treatment ("chip seal") to asphalt or concrete

Performance requirements will not apply to:

- Road surface repair including slurry sealing, fog sealing, pothole and square cut patching; overlay of existing asphalt or concrete pavement without expanding the area of coverage; shoulder grading; cleaning, repairing, maintaining, reshaping or regrading drainage systems; crack sealing; resurfacing with in-kind material without expanding the road or parking lot; practices to maintain the original line and grade, hydraulic capacity, and overall footprint of the road or parking lot; repair or reconstruction of the road because of slope failures, natural disasters, acts of God or other man-made disaster.
- Sidewalk or bicycle path projects, where no other impervious surfaces are created or replaced, built to direct storm water runoff to adjacent vegetated areas
- Trails and pathways, where no other impervious surfaces are replaced or created, and built to direct storm water runoff to adjacent vegetated areas
- Underground utility projects that replace the ground surface with in-kind material
- Curb and gutter improvement or replacement projects that are not part of any additional creation or replacement of impervious surface area

### **(2) Storm Water Control Plan**

All projects subject to post-construction storm water quality performance requirements must provide a storm water control plan to complete an application for any discretionary approval and/or grading permit. The Storm Water Control Plan shall be comprised on the following information:

- Project name, application number, address and assessor parcel number
- Name of applicant and land owner
- Project Description
- Total site area
- Show an accounting of pre-project impervious areas and impervious areas created or replaced. Determine total new impervious surface area, total replaced impervious surface area, total new pervious area, and calculation of Net Impervious Area
- Delineate and quantify the impervious area being drained to landscape and/or the extent of pervious pavement
- Divide the project area into discrete Drainage Management Areas
- Statement of water quality treatment performance requirements that apply to the project
- Summary of site design and runoff reduction measures (Performance Requirement No. 1) selected for the project
- Description of all post-construction structural stormwater control measures
- Supporting calculations used to comply with the applicable water quality treatment performance requirements
- Documentation stating that the selection, sizing, and design of the stormwater control measures meet the water quality treatment requirement
- Water quality treatment calculations used to comply with water quality treatment performance requirement/s
- Operations and Maintenance Plan for all structural stormwater control measures

### (3) Performance Requirement No. 1 Site Design and Runoff Reduction

Projects that create and/or replace greater than or equal to 2,500 square feet of impervious surface must implement the following design strategies:

- Limit disturbance of creeks and natural drainage features
- Minimize compaction of highly permeable soils
- Limit clearing and grading of native vegetation
- Concentrate improvements on the least sensitive portions of the site
- Implement one or more of the following site design measures:
  1. Direct roof runoff into cisterns or rain barrels for reuse
  2. Direct roof runoff into vegetated areas
  3. Direct runoff from sidewalks, patios, driveways and uncovered parking areas to vegetated areas
  4. Construct driveways, walkways and parking lots with permeable materials

(4) Performance Requirement No. 2 Water Quality Treatment

(a) Projects that create a Net Impervious Area of 5,000 square feet must treat storm water runoff to reduce pollutant loads and concentrations using physical, biological and chemical removal (single family residences are exempted). See City of Paso Robles Stormwater Technical Guide.

Net Impervious Area is the total (new and replaced) post project impervious areas minus any reduction in total imperviousness from the pre-project to the post-project condition:

$$\text{NIA} = \text{New and Replace Impervious Area} - \text{Reduced Impervious Area Credit}$$

Reduced Impervious Area Credit is the total pre-project to post-project reduction in impervious area.

(b) Water quality treatment shall be applied in the order of preference listed below (highest to lowest). Water quality performance requirements shall apply to the runoff from existing, new and replaced impervious surfaces on sites where runoff from existing impervious surfaces cannot be separated from runoff from new and replaced impervious surfaces.

Low Impact Development (LID) Treatment Systems:

Implementing harvesting and use, infiltration, and evapotranspiration storm water control measures that collectively achieve the following hydraulic sizing criteria for LID systems:

- Retain storm water runoff equal to the volume of runoff generated by 85<sup>th</sup> percentile 24-hour storm event (0.80 inches).

Biofiltration Treatment Systems:

Implement biofiltration systems using facilities that must be demonstrated to be at least as effective as a biofiltration system with the following design parameters:

- Maximum surface loading rate appropriate to prevent erosion, scour and churning within the biofiltration system itself and equal to five inches per hour, based on the flow of runoff produced from a rain event equal to 0.2 inches per hour intensity.
- Minimum surface reservoir volume equal to the biofiltration treatment system surface area times a depth of six inches.
- Minimum planting medium depth of 24 inches. The planting medium must

sustain a minimum infiltration rate of 5 inches per hour throughout the life of the project and must maximize runoff retention and pollutant removal. A mixture of sand (60%-70%) meeting the specifications of ASTM C33 and compost (30%-40%) may be used. An alternative planting medium may be utilized if it is demonstrated to be equal or more effective at attenuating pollutants than the specified planting medium mixture.

- Proper plant selection as provided by the Central Coast LID Initiative.
- Subsurface drainage/storage (gravel) layer with an area equal to the biofiltration treatment system surface area and having a minimum depth of 12 inches.
- Underdrain with discharge elevation at top of gravel layer.
- No compaction of soils beneath the biofiltration facility.
- No liners or other barriers interfering with infiltration (excepting conditions where lateral infiltration is not feasible).

#### Non-Retention Based Treatment Systems:

Stormwater Control Measures that collectively achieve at least one of the following hydraulic sizing criteria for non-retention based treatment systems:

- Volume Design Basis: Treat stormwater runoff equal to the volume of runoff generated by the 85<sup>th</sup> percentile 24-hour storm event (0.80 inches).
- Flow Design Basis: Treat the flow of runoff produced by a rain event equal to at least 0.2 inches per hour intensity.

#### (5) Performance Requirement No. 3: Runoff Retention

Projects that create and/or replace greater than or equal to 15,000 square feet of impervious surface are required to meet runoff retention performance requirements using Low Impact Development Standards. See Stormwater Technical Guide.

Prevent off-site discharge from events up to the 95<sup>th</sup> percentile 24-hour rainfall event (1.45 inches). Retention is to be achieved by optimizing infiltration. Project design shall be founded in Low Impact Development principles. Site opportunities and constraints shall be identified and a site assessment shall include:

- Topography, structures, utilities, easements
- Hydrologic features including natural areas, wetlands, watercourses, seeps, or springs.
- Depth to seasonal high groundwater
- Locations of wells
- Depth to impervious bedrock
- Presence of unique geology

- Geotechnical hazards
- Soil and/or groundwater contamination
- Soil types and hydrologic soil groups
- Vegetative cover/trees
- Run-on characteristics (estimate off-site runoff discharging to the project area)
- Existing drainage infrastructure
- Zoning, setbacks and open space requirements
- Define the development envelope and protected areas, identifying areas that are most suitable for development and areas to be left undisturbed.
- Conserve natural areas including existing trees, vegetation and soils
- Limit the overall impervious footprint of the project
- Set back development from creeks, wetlands and riparian habitats
- When runoff reduction measures and natural landscape areas have been maximized to the extent feasible storm water control measures shall be used to comply with performance requirements. Storm water control measures associated with small-scale, decentralized facilities designed to infiltrate, evapotranspire, filter, or capture storm water shall be optimized. Refer to the City's technical guidelines for sizing of storm water retention facilities.

(6) Performance Requirement No. 4: Peak Management

All projects that create and/or replace greater than or equal to 22,500 square feet of impervious surface in Watershed Management Zone 1 shall manage peak stormwater runoff as required below as well as meeting Water Quality and Runoff Retention requirements.

Post-development peak flows, discharged from the site, shall not exceed pre-project peak flows for the 2 through 10-year storm events.

A Stormwater Control shall be provided in conformance with the Stormwater Technical Guide on File with the Stormwater Control Manager in the Department of Public Works.

(7) Operation and Maintenance for Structural Stormwater Control Measures

The design of all structural stormwater control measures must be accompanied by an operation and maintenance (O and M) plan. Minimum requirements for the O and M plan are described in the City's Technical Guide.

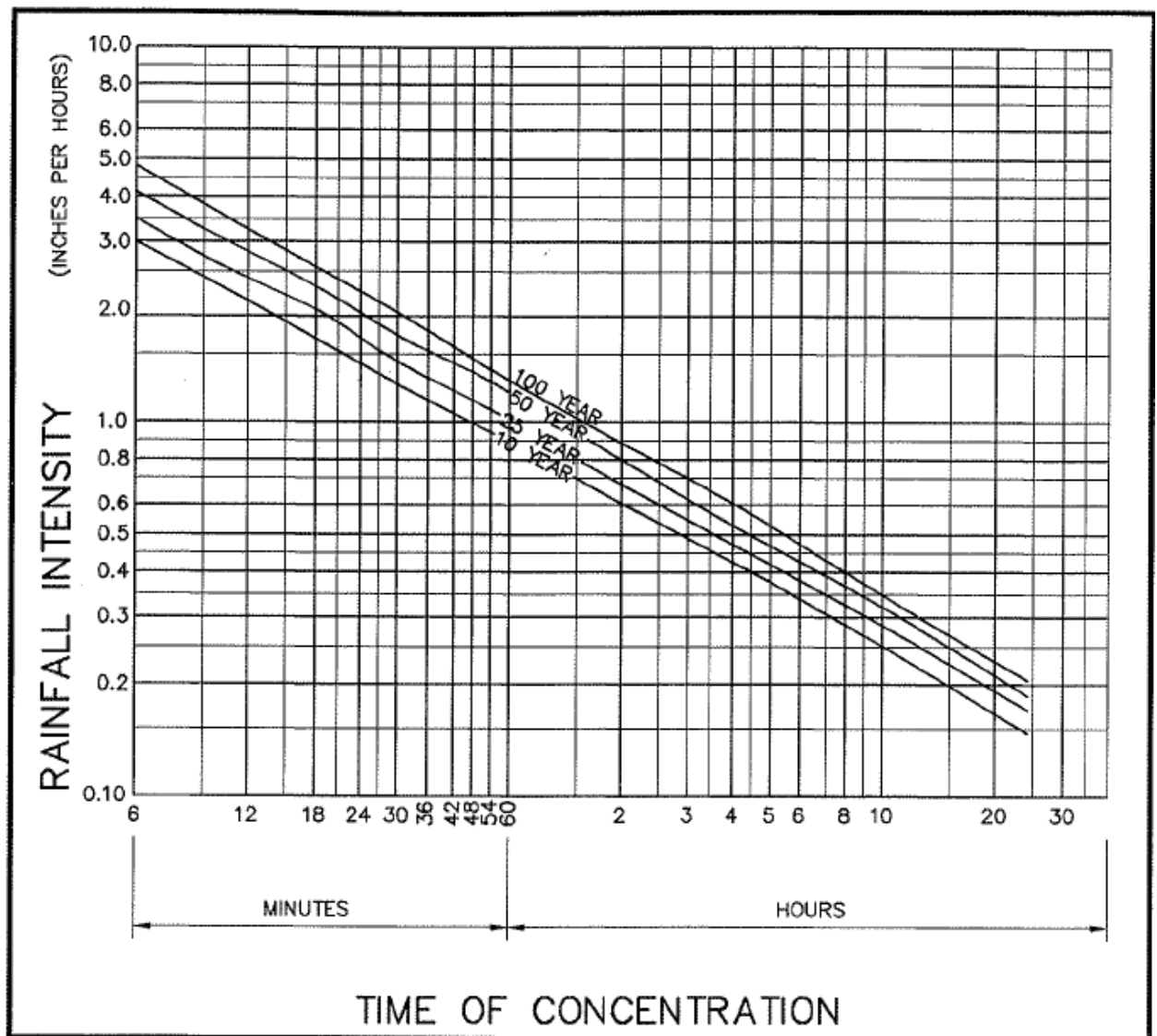
Prior to project acceptance or occupancy, verification of on-going maintenance of structural stormwater control measures must be established by legal binding agreements.

## **B. Off-Site Hydrology, Cross-Culverts, Open Channels**

### **1. Hydrology Calculations**

The Rational Method shall be used to compute the total volume of runoff from a development with an area less than 200 acres. For drainage areas in excess of 200 acres, or where the design engineer determines that the Rational Method is not practical or appropriate, the design engineer shall provide all documents necessary to confirm computations.

All calculations shall be prepared by a registered professional engineer with a current license to practice in the State of California. The rainfall intensity curve included herein is available for use as part of the hydrology calculations. In computing runoff in a partial development, adequate provisions must be made for the drainage of the overall improvements and/or drainage tributary. Hydrology calculations shall be based upon ultimate land use designations in accordance with the adopted General Plan.





## **2. Closed Conduits**

Design considerations for closed conduits are as follows:

- Pipe friction losses determined by Manning's equation.
- Entrance and exit losses.
- Tail-water impacts.
- Entrance control headwater.

For each length of pipe, the hydraulic grade line (hgl) at the pipe entrance and exit shall be determined assuming both inlet control and outlet control. The more restrictive shall control. The storm drain system shall be designed to meet the following conditions:

1. The hydraulic grade line shall be a minimum of 0.50 feet below the elevation of inlet grates and manhole covers of all structures for a design storm of 25 years. Said gradient shall be shown on the profile for storm drain systems.
2. Minimum pipe diameter allowable on any public storm drain shall be 18 inches.
3. Storm drain systems shall be designed for the 25-year storm. In a sump condition a secondary overland flow shall be included such that during the 100-year storm, all buildings or first floor elevations shall be at least one foot (1') above the 100-year storm.
4. Street capacity shall be defined as the 10-year storm confined between the crown of the street and the top of curb. Where the street capacity is exceeded at either the curb or the crown, a storm drain or other approved facility shall be provided to convey the excess flows. In all cases, the 100-year storm shall be contained within the right-of-way.

Cross culvert design shall be determined on the basis of a twenty-five year storm with no head. The hydraulic entrance condition shall be such that the 25-year discharge will have the specified freeboard in the upstream channel or waterway and that the 100-year discharge will be contained within the banks of the upstream waterway or drainage easement. The entrance to the closed conduit minor waterway may be submerged provided that the above criteria are satisfied. The invert elevation of the closed conduit entrance shall not be set lower than the natural flowline of the waterway or open channel flowing into it.

### **3. Open Channels**

Open channels shall be designed based on Manning's equation. The impacts of culverts, bridges or other structures affecting the hydraulic performance of the channel shall be considered as appropriate.

The City Engineer may require more complete analysis if he/she determines conditions merit a more thorough study. This additional analysis may include determination of the water surface profile, analysis of critical sections, and analysis of erosion and/or sedimentation.

Maximum velocity for channels flowing full shall be limited to preclude erosion. Freeboard of at least one foot based on 25-year volumes shall be provided for all channels. Lining treatments shall extend to the full height of freeboard. The 100-year discharge shall be contained within the banks or within the easement established for the channel. For natural waterways, the design flow may be allowed in the natural overflow area.

### **4. Retention Basins**

Storm water retention for flood control purposes shall be applied as determined by the design engineer; typically where downstream conditions are constrained and properties are threatened or have been flooded in conditions existing prior to upstream development. Criteria for the design of retention basins may be reviewed on a case by case basis. Typically, the volume of storage for flood control purposes is based upon the post-development 100-year, 24-hour storm event.

### **5. Detention Basins**

A detention basin is defined as a holding facility where the rate of flow from the basin is limited to that rate historically occurring prior to development. The volume of storage of a detention basin shall be determined by theoretically matching the historical hydrograph of flows leaving the previously undeveloped land under consideration.

### **6. Storm Drain Alignment Criteria**

Storm drain lines shall be parallel with street centerlines to the extent practical and typically twelve feet southerly or easterly of the centerline (**Standard Detail U-1**).

Maximum spacing for manholes shall be 500 feet. Manholes shall be located at junction points, changes in gradient and changes in conduit size. The alignment between any two manholes may consist of one curve and one tangent section. A manhole must be placed at the beginning or end of any curve. Reverse curves are not acceptable between manholes. Curve radii shall conform to pipe manufactures recommendations. All manholes must be located in areas accessible for maintenance.

## **7. Easements**

Drainage facilities must be located in a public street right-of-way or within a public drainage easement. Easements for closed conduits shall be a minimum width of twenty feet (20). Easements for open channels shall have sufficient width to contain the channel with a minimum ten foot (10) setback to side slopes and a fifteen (15) foot wide service road on at least one side.

## **V-2. MATERIALS**

Closed Conduits shall be high density polyethylene (HDPE) with water tight couplings, reinforced concrete pipe (RCP), or hot-dipped galvanized Corrugated Metal Pipe (CMP).

Standard pre-cast concrete manholes shall be typical (**Standard Detail D-2**). Special designs of manholes or junction boxes shall be approved by the City Engineer.

Open conduits may be natural watercourses, earthen channels, or channels lined with materials such as:

- Native grass which forms a thick, dense sod without irrigation;
- Turf reinforcement mats, erosion control blankets, or geotextile materials. Such material may be interplanted with vegetation;
- Rock slope protection in accordance with Caltrans specifications;
- Bioengineering methods recommended in Natural Resource Conservation Service's *Streambank Soil Bioengineering Field Guide for Low Precipitation Areas*;

Drain inlets shall conform to **Standard Detail D-1**. Grates shall be adequate for AASHTO's HS-20 traffic loading and shall be double dipped hot galvanized or approved equal.

All headwalls, wing-walls, and end-walls shall be constructed of Class "A" reinforced Portland cement concrete. Trash racks shall be provided where necessary to prevent clogging of culverts and storm drains.

### **V-3. CONSTRUCTION GUIDELINES**

#### **A. General**

Excavation, pipeline placement and backfill shall conform to **Section VI-3** of these specifications for sanitary sewers.

Concrete structures shall be placed in accordance with these Standards and Specifications and shall conform to the requirements of Section 51 of Caltrans Standard Specifications.

RESOLUTION NO. 14-xxx

A RESOLUTION OF THE CITY COUNCIL OF THE CITY  
OF PASO ROBLES ADOPTING AMENDMENTS TO DEPARTMENT  
OF PUBLIC WORKS STANDARD DETAILS AND SPECIFICATIONS IMPLEMENTING STATE  
OF CALIFORNIA STORMWATER REGULATIONS

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WHEREAS, in February 2013, the California Water Quality Control Board adopted the Municipal Phase II Stormwater Permit affecting the submittal and implementation of erosion and sediment control on construction sites; and

WHEREAS, on July 12, 2013, the Central Coast Regional Water Quality Control Board adopted post-construction stormwater management requirements establishing specifications for stormwater quality related to the design of all new development to be implemented by each Central Coast municipality by March 6, 2014; and

WHEREAS, on July 2, 2013, the City Council of the City of El Paso de Robles adopted a Storm Water Quality Control Ordinance referencing the Department of Public Works Standard Details and Specifications as the City's document for implementation of the Water Board's mandates for the post-construction stormwater management related to the design of new development; and

WHEREAS, on August 20, 2013, the City Council of the City of El Paso de Robles adopted the revised Grading Ordinance referencing the Department of Public Works Standard Details and Specifications as the City's document for implementation of the State Water Board's mandates for construction site erosion and sediment control.

THEREFORE, BE IT RESOLVED AS FOLLOWS:

That the City Council of the City of Paso Robles does hereby approve and adopt amended Sections III and V of the Department of Public Works Standard Details and Specifications attached hereon as exhibits.

PASSED AND ADOPTED by the City Council of the City of Paso Robles this 18<sup>th</sup> day of February, 2014 by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST:

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Duane Picanco, Mayor

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Caryn Jackson, Deputy City Clerk