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SYNOPSIS

Peabody Stadium Passthrough Storm Drain System June 2017

Existing Setting

Peabody Stadium at Santa Barbara High School was developed in the 1920's on what was the upper limits of an estuary, historically connected hydrologically with the coast. Prehistorically, what is now Mission Creek coursed more or less directly from the present Mission location to this estuary.

Approximately 260 acres comprising a portion of that area known generically as the Riviera and lying offsite northwesterly of Anapamu Street, drain toward the Stadium. This offsite area was largely open space when the Stadium was constructed but is now densely developed residentially. Of note is that the **onsite** area tributary to the subject storm drain system is only about 14 acres. Storm drainage from the large offsite tributary area is conveyed toward the Stadium in a series of mostly City- and County-maintained open channel and piped storm drains. Three of the storm drains now enter the Stadium just below Anapamu Street, another off the end of Figueroa Street, and one off the end of Rinconada Road.

Also of note is that a portion of the drainage from approximately 150 of the 260 acres of offsite tributary area is normally, but not dependably, diverted westerly by way of storm drains to the present Mission Creek. These diversions occur at County Flood Control's El Encanto Debris Basin on Micheltorena Street near California Street and at a valving system on Micheltorena Street between Laguna and Garden Streets. These diversions are characterized as undependable due to possible blockage of the debris basin's outfall pipe cage and of the valving system and to possible adjustment of the valve settings during flood conditions.

When the stadium was constructed circa 1927, a single 36" RCP storm drain (the "School Drain") was constructed beneath the field to convey offsite and onsite drainage. A second 42" RCP was constructed parallel with the 36" sometime prior to 1940. These storm drains connected to a pre-existing 4'x4.5' stone and mortar box culvert near the Fieldhouse which, to this day, continues across the campus to Canon Perdido Street. About 1983, the 42" RCP was disconnected from the box culvert and extended independently across the remainder of the campus by County Flood Control to connection with the upper reach of their East Side Storm Drain (ESSD). Also at that time, Flood Control constructed a diversion structure to control flows and maximize conveyance of the combined piping system.

Combined, the ESSD and School Drain have the capacity to convey runoff from approximately a 10-year return interval storm, provided the upstream diversion systems are fully functional. The local hydrologic design standard is a 25-year return interval storm.

It is important to note that all storm drainage from the tributary watershed, both on-site and offsite, is conveyed by storm drains up to their capacity and then in conjunction with overland flow across the campus to Canon Perdido Street; Peabody Stadium lies in the historical drainage corridor. During major storm events, some ponding and detention of stormwater occurs on the field.

Defects

During initial Peabody Stadium Renovation design development efforts it was determined that the existing 80-90 year old storm drainage facilities were undersized and were beginning to fail structurally. In addition, the existing pipeline alignment was beneath the proposed Grandstand footprint and the existing pipes were too shallow to accommodate the new track and field elevations. It was recommended by the Engineer and agreed to by the School District that the storm drains be replaced and re-aligned and additional conveyance capacity be incorporated into the new design.

During this period, meetings were held with County Flood Control District and City Public Works Department to discuss the inadequacies in condition and capacity of the storm drains and the disparity in amounts of offsite versus onsite drainage conveyed by the system. Neither agency accepted any responsibility for maintaining or upgrading the storm drainage facilities on School property and declined to participate.

Proposed System

A new drainage collection and conveyance system, which will generally maintain the existing drainage patterns and system operating characteristics, is to be constructed onsite as part of the project improvements. The new system will provide improved storm drain conveyance capacity beneath the new synthetic turf field and surrounding improvements. Detention basins are proposed to attenuate peak storm flows. It is important to note that the offsite tributary drainage is unaffected by the project and hydrologic peakflows coming from offsite will remain unchanged in the post project condition.

The primary drainage improvement elements proposed with the project include parallel 42" and 54" steel reinforced HDPE storm drains which will restore pipeline watertight integrity, mitigate against corrosivity of in situ soils, reduce failure risk, and increase drainage conveyance capacity. The 36" School Drain is proposed to be increased to 54" diameter while the ESSD tributary storm drain will remain at 42" because of existing system downstream hydraulic controls. All onsite structures will be replaced; the diversion structure will be repositioned and reconstructed in a manner which will maintain the hydraulic head (pressure) relative to the existing ESSD system and provide expanded overflow into the School Drain, resulting in increased protection of the Stadium.

The Grandstand Replacement and Stadium Renovation Project will result in an increased amount of impermeable surfacing, primarily due to the larger grandstand building and increased track paving. The new synthetic turf field surface is to be underlain with a thick gravel layer as part of the structural section and will have a gravel-filled trench for the subsurface drain system around the perimeter. The substantial void space contained within the gravel backfill will mitigate against the increased stormwater volume resulting from additional impermeable surface coverage.

After mitigation for increased impervious area, the only net increase in stormwater peakflow resulting from the project would be due to elimination of existing ponding / detention volume by improved field drainage. It is proposed to provide an alternate detention area of greater capacity on the Baseball Field by creating a berm between the field and back of sidewalk along Canon Perdido Street. A restriction will be placed at the end of the new larger School Drain where it joins the existing stone and mortar box culvert. This will force stormwater flows which exceed pre-project flows to discharge to the ground surface from a number of grated structures along the upper margin of the Baseball Field.

An additional stormwater detention area will be created in the paved basketball court area between the northwesterly end of the Stadium and Anapamu Street, accomplished with design of the Stadium access pathway and low walls. This additional stormwater storage facility in this location will increase mitigation of hydrologic peakflows, protection against silt and debris-laden overland flows coming off the Riviera and overtopping the curb and sidewalk at the sag point in Anapamu Street, and mitigation of excessive storm flows from the residential developments to the west.

A storm water pump system with standby electrical power supply will be implemented in the low lying pool equipment area, which suffered significant flooding in 1995.

After construction of the new storm drain system, all existing storm drain pipes and structures, including the box culvert under the Swimming Pool, will be pressure grout filled and abandoned in place, or removed, depending on location.

The proposed storm drain improvements are designed to provide increased conveyance capacity to accommodate onsite and offsite drainage in the new field area up to approximately the 25-year design storm, without the upstream diversion facilities being fully functional.