ITEM J.3

Summary/Comparison of Storm Drain Repairs 2013 and 2014
October 2014

In late May/early June of 2013 the coastline experienced a dramatic loss of sand from the effects of a hurricane that originated out in the south Pacific. The resulting south swell cut into the beach at about a 45 degree angle and eroded/cut the beach back 20 to 30 feet all along Capistrano Bay beach within about a two day period.

Prior to this time our storm drain outfalls (the end of the pipe discharging onto the beach) had always been completely buried under several feet of sand cover. Over a period of about 5 years, however, the beach gradually eroded back to a point where all of our storm drain outfalls finally became exposed year-round. About 3 to 5 feet of each pipe end could now be visible just about all year long.

Everything changed in the early summer of 2013 when we lost so much beach overnight. The impact to our storm drain system was dramatic. There are 11 storm drains that flow from the community out onto the beach. In the summer of 2013 the District had damage to 6 of those drains. On all 6 drains, the most seaward 20 foot section of each pipe was ripped loose as the beach was cut back from 20 to 30 feet.

These pipe sections (high density polyethelene or HDPE) were all retrieved from the surf over the following several days (these things actually float) and stored in the District's Northgate maintenance yard where they remain today. Given the magnitude of beach erosion it was not practical to reinstall them on the beach as the entire 20 foot long sections would be completely exposed to get beat up in the surf and be an eyesore for homeowners and a hazard to the public.

To complete the storm drain repairs for the summer of 2013 the District went through and installed bracing at the outfall ends of each pipe at the point where the beach was eroded back. It was not practical or cost-effective to try to excavate the beach sand further back at each drain pipe to install additional bracing along each pipe run. Sand does not hold its shape and just continues to collapse and fall into the trench area and it would cost the District thousands of dollars to bring in trench shoring and large excavating machinery on top of the basic cost for bracing. ***see footnote below*

In the summer of 2014 the community experienced further beach erosion from the impact of five hurricanes originating off the central Mexico coast. The results from these storms was similar to the previous summer with additional loss of beach. Out of 11 total drains there were 5 locations with more drain pipe sections being torn loose. While the outfall ends were adequately braced, the now-exposed unsupported pipe sections further back from the bracing were torn loose. Between the two summers of hurricane surf our storm drain system has lost from 30 to 40 feet of pipe at 6 of our 11 drains.

The following page provides a comparison of the repairs and cost over the two summers.

***At this point you might be questioning why these pipe sections were not originally braced in place to prevent from being torn loose. It's clear today that all the drainpipe should have been braced. District records show that the old original corrugated metal pipes (on the beach only) were all replaced with new plastic pipe back in the early 90's by Brongo Construction and the beach erosion we are now experiencing has revealed that there was no bracing installed.*

ITEM J.3

GENERAL WORK DESCRIPTION:

- access can only be done during the quarter-moon phase when the tides are low – every two weeks we get a 4 to 5 day window of opportunity
- 4 WD front loader (sort of looks like a giant tractor) with operator and two crewmen on the ground
- pipe bracing consists of 3" diameter galvanized steel pipe in 10 ft. lengths placed vertically
- lots of digging, make sure drain pipe has adequate fall for proper drainage
- dig/drive bracing into the sand at least 6 feet down, one on each side of drainpipe
- bolt in a wood cross-member over the top of the drainpipe to hold the pipe in position and prevent from being driven upward from tide action – groom/grade sand when complete

Drain # 2 - 35121
2013 – install bracing at exposed pipe outfall
2014 – no additional work required
**for some reason, this outfall tends to stay buried despite the erosion of the sand embankment behind it.*

Drain # 3 - 35195/197
2013 – install one set of pipe bracing
2014 – install one additional set of pipe bracing further back

Drain # 6 - 35355/361
2013 – remove old existing bent/rusted bracing, install one new set of pipe bracing
2014 – reinstall existing 20 ft. pipe section that washed away
install one additional set of pipe bracing

Drain # 8 - 35425/431
2013 – reinstall existing 20 ft. pipe section that washed away (cut back to 10 ft in length)
install two sets of pipe bracing
2014 – pull out two sets of existing pipe bracing (from last yr) and reinstall further back to new position

Drain # 9 - 35505/507
2013 – no work this year on this drain (this drain was not exposed from all the erosion)
2014 – reinstall existing 20 ft. section of drain pipe that washed away
install two new sets of pipe bracing

Drain # 10 - 35531/535
2013 – install one set of pipe bracing
2014 – reinstall 13 ft. of existing drain pipe that washed away
pull out existing set of pipe bracing (from last yr) and reinstall further back at new position

Drain # 12 - 35595/601
2013 – install two sets of pipe bracing
2014 – no work at this location this year

Cost Comparison:
2013 - $8000 (was $8500 but contractor agreed to lower price to get future work)
2014 –Time/Material not to exceed $9389. There is more work this year due to reinstalling 3 drain pipe sections that weren't in the scope of work last year. With T&M the contractor can't lose and we stand to get the work for less. This is an excellent offer by the contractor.