

## **Category 7 – Best Building Project – Specialty Contractor (Over \$10 million)**

**Contractor: Fiore & Sons, Inc.**

**Project: The Canyons Master Development, Castle Pines, Colorado**

### **Project Description**

The Canyons, a 1,270-acre master-planned residential community located east of I-25 between Hess Road and Happy Canyon Road interchanges in the City of Castle Pines, is a master development project built by Shea Homes. (1) At build-out, The Canyons will feature 2,000 single and multi-family homes and will roughly double the footprint and population of Castle Pines. (2) This is a new community of homes that respects the land's rolling topography, upholds an ethic of preservation and commitment to saving and restoring the native landscape, and follows the unique contours of the land. (3)

### **Getting the Project Underway – Challenges Lie Ahead**

Kicking off the project, while not insurmountable, did require insightful, heightened pre-problem solving skills and dedicated, consistent teamwork. The following three challenges were the first calls to action for the team.

1) Site Pre-Topo. The Canyons site is so large and, at the beginning of the project, the only means to perform a topo was either by foot or on an OHV vehicle. This meant walking a 500-acre site, tight enough to get an accurate topo. This method would have been extremely time consuming and predictably, the final product would not have met the strict standards.

2) Construction Water Source and Usage. The nearest source of water was a fire hydrant located two miles from the site, making utilization goals nearly impossible. We were lucky, however, because it was tied into the City of Parker Water's 30" main which guaranteed consistent, reliable water pressure. A 4" water meter (not easy to find) was purchased and connected to the pumper nozzle of the hydrant which ultimately provided close to 1,000 gallons of water per minute. (4) Following, 2 miles of 6" HDPE pipe was installed and welded in place and was then connected to several drop tanks around the site. (5) At one point, a booster pump was installed, in the middle of the line, to increase water pressure for greater use capacity...up to 800,000 gallons of water per day.

**3) GESG Clearance to Start Excavation.** Before mass excavation could proceed, the team excavated and installed approximately 20 temporary sediment basins and diversion ditches in locations spread across the site, including spill ways and overflow pipes. The biggest challenge was several ponds located in highly sensitive areas, requiring archaeological monitoring to locate any potential ancient artifacts. The only “find” was a small hearth feature which ultimately caused minimal delays.

### **Colossal Project Size – More Challenges Lie Ahead**

The enormous Canyons site involved moving over 4.5 million cubic yards (CY) of dirt and because of the tight construction schedule, earthmoving equipment pushed over 30,000 CY a day, sometimes hauling it over two miles one way. These long hauls meant increased coordination of men and equipment. (6)

### **Weather – It’s Out of Control**

The Canyons in Castle Pines, CO, elevation 6,400’, is vulnerable to Mother Nature’s “motivation”. Weather became a major factor, requiring crews to work through every weather condition, from heat and hail, to thunderstorms and relentless snowfalls. These varied weather conditions created challenges for night shifts to minimize dust and heat, site prep to direct rain runoff, dry lifting to avoid ground freezing, and the removal of thousands of CY of snow... all this to maintain a consistent adherence to the aggressive construction schedule to minimize delays. (7)

### **Project Execution and Excellence – The “A” Team**

Coordination, planning, communication and execution was everything! The level of expertise, confidence and consistency of the “A” team was immeasurable for success. The project superintendent, foremen (too many to name) and surveyor strategized early in the process to establish strict guidelines, metrics and analytics, enabling the smooth, uninterrupted construction process to move forward. Many manhours were invested during pre-construction to determine the best and most efficient way to move necessary materials and to execute the plans flawlessly. Thanks to a well-planned, well-executed project plan, the Canyons project is distinguished as one of the largest, equipment intensive, multi-family projects constructed in the past several years in Colorado... it’s “one for the record books.”

## **Partnering for Sophisticated Outcomes**

A highly motivated, hands-on, sophisticated client who valued innovation, teamwork, communication, and grit...this was the unfailing, unshakable ingredient to finishing the project according to plan! Shea Homes, project owners, and their project team worked to create inventive goals and outcomes that met design, schedule, budget and aesthetic goals. As engaged partners, the Shea team was there every step of the way, answering questions, addressing concerns, making tough decisions. Their clear plan and specific expectations, coupled with being open to problem-solving with the team, was the difference maker. Shea trusted that by bringing team members together (the civil contractor, Parker Water, the City of Castle Pines, soils engineers, civil engineer, 3<sup>rd</sup> party inspectors, erosion control subcontractors, and wall subcontractors), a colossal project like the Canyons would be the BEST example of how constant, effective, 2-way communication among everyone who “touched” the project would most notably make the difference between good and great.

## **Construction Innovations / State of the Art Advancement**

During one of the major excavations, an unexpected large plume or seam of cobble/conglomerate formational material was encountered. (8) Rather than excavate the material and place as fill, the team put their heads together to come up with the best idea. The plan included quickly getting the soils engineer involved who determined that this challenging material could be crushed into a usable product. Without delay, consensus was gained which allowed for the construction team to proceed immediately. The remedy: We potholed and potholed to determine the full extent of material and ultimately determined there was over 250,000 CY of the cobble/conglomerate formational material. Without hesitation, a team was assembled and WE WENT FOR IT! We hauled over 250,000 CY of the conglomerate to a stockpile location outside of the work area. We then went to work with the next step. We subcontracted a portable crushing company to start processing the material. (9) We “made” three different types of material. 1<sup>st</sup>) Class 6 Road Base: Approximately 40% of the material made was a Spec Class 6 road base which we were able to use for the composite section under all roads. 2<sup>nd</sup>) Cobble: Approximately 20% of the material was 6” plus cobble which was screened off and stockpiled for use in the existing gulch improvements. 3<sup>rd</sup>) We thought there was 40% byproduct (screened sand) that was basically a waste product until we evaluated the situation further. We tested and re-tested this product to

present the results to governing authorities. It was approved for use as bedding under all the utilities installations. This was a HUGE victory because not only were we making road base and cobble, we were also making bedding material and had a 100% product yield for all material going through the crushers. Another major bonus, which made the City of Castle Pines very happy, was that this operation eliminated over 18,000 semi-trucks from driving through their City to deliver aggregates. Not only were we getting 100% product yield, keeping the City of Castle Pines happy, but we were environmentally responsible by recycling on-site materials. Basically, everything that came out of the ground, went back in!

### **GPS and Drone Technology**

After our “very expensive” initial topo of the entire site, we quickly learned, with the help and expertise of our senior surveyor, that we were lacking the proper technological advances required for a project this size. We knew that an investment in the future of Drone Technology was imperative. So, as a matter of foresight and ingenuity, we invested in a top-of-the-line drone that would collect, process, and visualize survey data. This end-to-end solution tracked, mapped, and measured the entire worksite and was the answer to critical questions about the site’s progress, productivity, work quality, and safety. It meant we could fly the site without delays to get a topo back within 24 hrs. This may not sound like much, but before this Drone Technology, a surveyor would have had to walk the site, placing markers every 15 feet, and then proceed with the “old” method of surveying. We were now able to track our productions almost daily, assist with the design of future areas, and determine previous topo busts that were on the original topo. Not only was this state-of-the-art advancement a huge success for the Canyons project, it is now a permanent process and procedure on all current and future projects.

### **Safety – A Commitment to “Live Out Loud”**

**CDPHE CSEP INSPECTIONS AND SAFETY** - In a cooperative partnership between AGC and the Colorado Department of Public Health & Environment (CDPHE), we are the only heavy civil contractor in Colorado in the Stormwater Excellence Program (CSEP) program to best execute NPDES Discharge permit. (10) We utilize eight essential Guiding Principles and a Safety and Health Statement signed by the company President as the leading document in all Site-Specific Safety plans and subcontracts. Our company vividly reminds employees, all day

and every day, about safety... to “live out loud” safety, to practice our PRIDE principals, and to do right by the client, the company and each other.

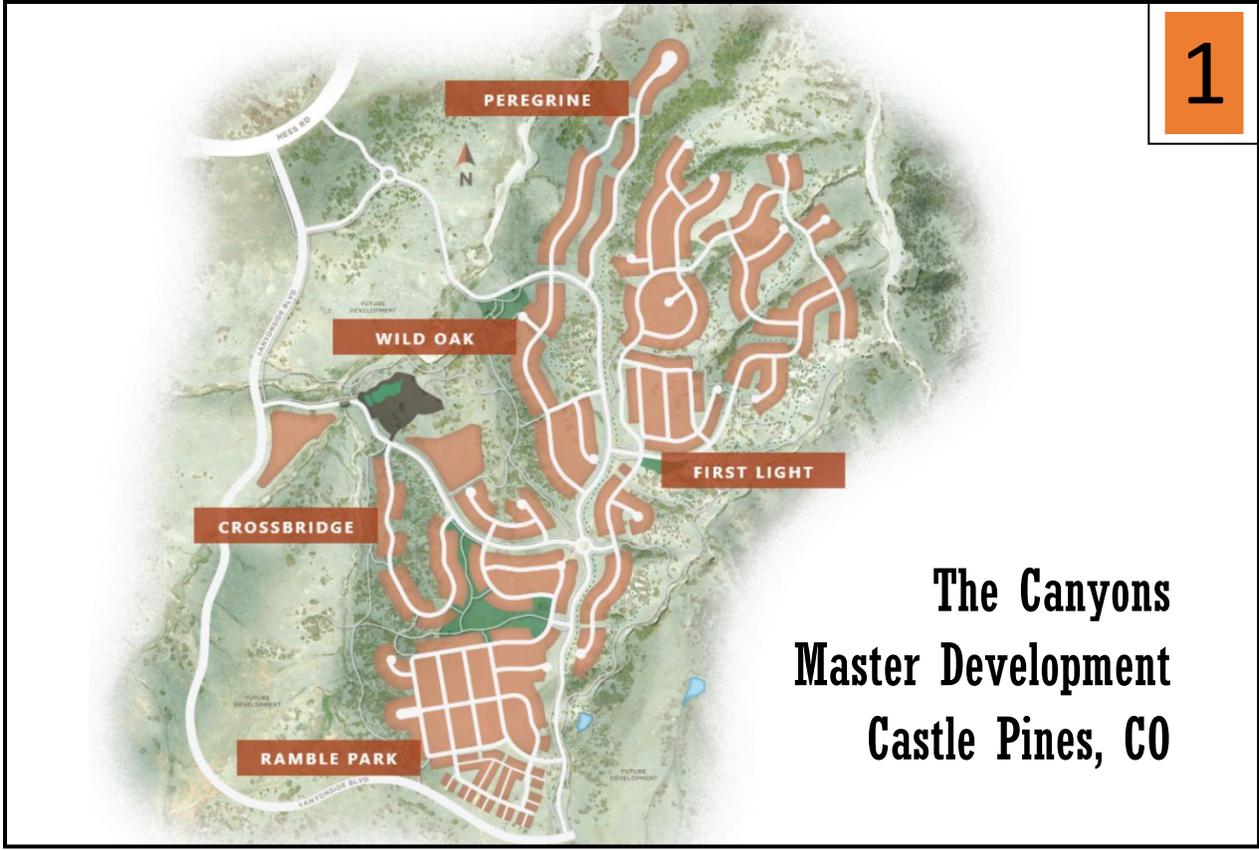
Every day, each work crew participates in a Daily Safety Huddle (DSH) where the planned activities for the day are outlined for tasks, hazards, and controls to safely execute the work. The JHA is reviewed by the foreman for the DSH. For our craftsmen, the Daily Safety Toolbox Huddle Record in the Safety Playbook and weekly Safety Tailgate Topics are regularly scheduled. Related and important to supervision are the Monthly Foreman Meeting, Monthly Company Safety and Wellness Committee, and Weekly Scheduling Meeting all with significant training and safety topics.

We have put great effort in the Incident and Near Miss Reporting Process to leverage our accounting, human resources, and time keeping software to help track and disseminate reports and observations. The System allows for trending and tracking of data and is very user friendly for all employees. The System is Smart Phone capable and integrated into the time keeping practices of all employees. The result is that reporting accuracy and volume has increased and response to items of a more critical nature has improved and sped up. Delivering training via a Smart Phone enabled link and using small projectors on the jobsite has increased the delivery time and completeness for field crews buy in, and eliminates the need for them to attend fixed location classes.

In the past 3 years, the company has been awarded over 43 Safety Awards. We are PROUD of the consistent, inclusive efforts of all our employees to stay safe so that we all go home safely to our families each and every night.

Canyons Safety Record:

- 1) Project Fatalities – 0
- 2) OSHA Recordable Incident Rate – 0
- 3) Lost Time Accident Rate – 0



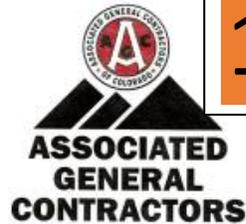








**COLORADO**  
 Water Quality Control Division  
 Department of Public Health & Environment



**COLORADO STORMWATER  
 EXCELLENCE PROGRAM**

*This certificate is awarded to*

**FIORE AND SONS, INC.**

Is recognized as a QUALIFIED member in the Colorado Stormwater Excellence Program for the fiscal year 2017.

Bradley J. Gassman  
 Safety and Environmental Director  
 AGC Colorado

Nathan Moore  
 Colorado Department of Public  
 Health and Environment