

## ALABAMA

### Montgomery Lower Catoma Interceptor Bradshaw Construction Corp.

Bradshaw Construction Corp. has been awarded a contract to construct four soft ground tunnels under state roads and railroads by microtunneling as part of a 37,000 ft long sewer pipeline project. The tunnels range from 83- to 99-in. diameter and 110 to 220 ft in length. Bradshaw has completed three of the four tunnels. The microtunneling equipment has performed admirably through the wet fine sand. The project is scheduled to finish in early October 2008.

Area Manager: Eric Eisold; Project Manager: Mark Rybak; General Superintendent: Frank Jones.

## CALIFORNIA

### Pacific Devil's Slide Tunnel Kiewit Pacific Co.

The Northbound top heading has now reached over 500 m (40 percent complete), the Southbound top heading is over 390 m (31 percent complete), the Northbound bench is over 225 m (18 percent complete) and the Southbound bench is over 180 m (14 percent complete).

Rock encountered since the last update has been mostly Category II ground — consisting of excavating 1.6 m of tunnel; applying 8.6 cubic m of shotcrete; standing 1 girder; and installing eleven 4-m No. 7 dowels — but we have also encountered some portions of Category III — consisting of excavating a 1.2-m round around the supporting core utilizing a tunnel excavator; applying 250 mm of shotcrete; installing 41 4-m tube spiles; standing one girder; and installing 4- and 6-m drill-grouted dowels. Currently approaching a critical portion of the tunnel and expecting to encounter a long run of Category III and possibly some Category IV — consisting of excavating 1.0 m round around supporting core using tunnel excavator; standing lattice girder; applying 300 mm of fiber reinforced shotcrete; installing 4- and 6-m grouted dowels; installing 41, 4-m tubespiles; and shotcreting a temporary invert arch.

Also on the radar is the upcoming excavation of the cross passages, niche excavation and the installation of the third phase of ventilation. Planning efforts for the final lining are currently under way with form parts and pieces being offloaded from shipment from Milan, Italy.

Project Manager: Scott Wimmer; Assistant Project Manager: Ryan Sheedy; Tunnel Excavation Manager: Paul Madsen; Concrete Manager: Mark Ramsey; Equipment Manager: Larry Andersen; Safety Superintendent: Brian Barker; Quality Control Manager: Brian Smith; and Tunnel Consultants: Gall-Zeidler Consultants. Contact: (650) 290-5100.

### Sacramento Upper NW Interceptor Sections 1 & 2 Traylor/Shea JV

Installation by EPB tunneling methods of approximately 19,240 lf of 144-in., PVC-lined, precast concrete segment lined tunnel. One 84-in. by 144-in. transition structure, one 144-in. by

120-in. transition structure, 20 access manholes, one interceptor manhole, and connections to three existing trunk sewer lines.

NTP was given on October 1, 2007. TSJV has fully mobilized the infrastructure to the job site. General facility installation is complete at the New Natomas Pump Station (NNPS) site. The NNPS shaft bracing installation and excavation is complete and the preparations for the TBM arrival are underway. TBM launch cradle and eye seal are complete. Installation of the Robbins surface belt storage unit is complete and the stacker conveyor will be installed in late September. Jet Grouting of the twenty access manholes is complete and the manhole shaft drilling is 95 percent complete (19 out of 20) as of early September. Shaft Drilling for lateral connections is 50 percent complete. Jet Grouting of Truxel Road is scheduled for September to December 2008. Robbins/Mitsubishi will furnish the EPB TBM which has been designed by Mitsubishi. Delivery to the site set for October 2008. Traylor Shea Precast has cast 24 percent of the T-lock lined concrete segments to date.

Project Manager: Dave Ferguson, Project Superintendent: Bert Dore, Project Engineer: Jeremy Theys, Assistant Project Engineer: Christophe Bragard, Field Engineer: Edouard Whitman. Further Information Contact: Jeremy Theys (916) 515-3933

### San Bernardino Arrowhead East & Arrowhead West Shea/Kenny JV

The East TBM holed through into the original City Creek Tunnel 8,000 lf long mined and supported with segments and the permanent steel pipe in place previously bored and supported under another contract on May 2 2008 The 22,443 lf East tunnel was constructed through some of the most challenging ground and water bearing zones. The TBM will be dismantled and removed from the Strawberry Portal and provisions for pipe installation will commence.

The West tunnel holed through into Devils canyon on August 20, 2008, after boring 19,886 lf though equally challenging ground and water conditions while achieving excellent performance in the pre-excavation grouting program. Preparations are now well underway for the final tunnel lining phase throughout both tunnels in 2008 and 2009. All work is expected to be completed in early 2010.

Project Director: Brian Fulcher; Project Manager: Bob Gordon, Mike Belcher PA, Stuart Lipofsky (transferred to Atlanta as assistant Project Manager); Project Engineer: Dana Downs; Superintendent Strawberry: Ron Walton; Superintendent Waterman: Bob Leslie; Walkers: Danny Sayre, Don Fullmer, Jeff Bright, Bobbie Briggs, Ron Sammeth, Bradley Leonard, Jim Autry. MWD Construction Manager: John Wallace; Resident Engineer: Mike Bell, Ian Ward McNally (transferred to Dorchester Mass.); Assistant Resident Engineer: Dan McMaster. Further Information Contact: Brian Fulcher (909) 883-3399, Brian.Fulcher@JFShea.com.

### San Diego San Vicente Pipeline Traylor/Shea JV

The San Vicente Pipeline Tunnel is an 11-mile water conveyance being built for the San Diego County Water Authority. The JV of Traylor Bros.

Inc. and J. F. Shea (TSJV) were low bidder at \$198,366,900 on April 20, 2005. Award occurred July 1, and NTP was July 14. Contract completion is scheduled for December 1, 2008.

The 8.5-ft diameter pipeline will connect an existing aqueduct, feeding San Diego County, to the San Vicente reservoir. The system will provide additional storage during wet periods, and another water source during dry periods or when the main aqueduct suffers a catastrophe, such as an earthquake.

The tunnel runs generally east-west across the north end of San Diego County. The west terminus is a shaft 100-ft deep, the east terminus is a portal, and two additional shafts are in between, with depths of around 75 ft. Depth of tunnel varies according to the surface topography, but can be as great as 600 ft. The tunnel encounters varying geology, ranging from extremely hard granitic rock near the ends, to loosely cemented conglomerate in between. Some of the conglomerate may also be tightly cemented. The water table is below the tunnel for approximately half its length, at the 'peaked' middle section of the alignment.

Due to the varying geology, multiple tunneling methods have been chosen. Two open face shields, equipped with excavator arms, and replaceable road header type attachments, will mine the conglomerates. These shields will be manufactured by Construction Tunneling Service. A refurbished Robbins main beam machine will mine the rock sections at each end. Conventional excavation methods will be used in a section of tunnel which interfaces the rock and conglomerate in an unpredictable fashion. Drill & blast, combined with Sequential Excavation Method type techniques will be used here.

*West Shaft Site/Reach 1:* The Robbins TBM completed mining through 4,400 lf of granite on March 31, 2008. The ground variously required ribs, channel, or bolts. Removal of the machine has been completed. Now that the Central Shaft digger shield has holed-thru into this reach, the West Shaft is being used to dismantle and remove that machine.

*Central Shaft Site/Reach 4 West, Reach 3 & Reach 2:* The CTS digger shield has advanced 12,000 lf through conglomerate to complete Reach 4 West. Excavation of 550 lf Reach 3, which involved blasting through granite in front of the open faced digger shield, has been completed. The shield then continued into 9,450 lf long Reach 2, consisting of the Fine Grained Friars formation. Hole-thru into the Reach 1 tunnel occurred August 22, 2008. Disassembly of the machine continues. Cleanup and removal of utilities proceeds prior to installation of 102-in. welded steel pipe.

*San Vicente Portal Site/Reach 4 East:* Support of the second CTS digger shield is from the San Vicente Portal site. This machine is currently 7,500 lf into the conglomerate of Reach 4



By Jack Burke

East, where the ground has been consistently hard, and difficult to mine. This reach is 22,000 ft.

Project Manager: Mike Jatezak. Contact: (619) 631-0777.

## GEORGIA

### Atlanta

#### South Cobb Tunnel Project Shea-Traylor JV

Shea-Traylor Received NTP for the South Cobb Tunnel Project on July 14, 2008. The project consists of approximately 29,000 ft of 24-ft finished diameter tunnel located in rock, with depths ranging from 150 to 400 ft. Most of the tunnel will be excavated using a TBM. Two shafts 44-ft, 6-in. diameter will be excavated for launching and recovery of TBM, and one shaft 116 ft diameter will be excavated and a waste water treatment plant will be constructed under Subcontract with Archer-Western Construction. Several smaller drill and blast tunnels will be connected to five diversion/drop shaft structures that interconnect with the mainline tunnel.

Current work on the project consists of setting up the site yards and offices, Rebuilding of the TBM, and start of shaft work on the three major shafts.

Project Manager: Dan Martz; Assistant Project Manager Stewart Lipofsky; General Superintendent: Norm Hutchins; Project Engineer: John Forero; Field Engineer: Percy Townsend; Surveyor: Bill Currier; Cobb County Water System Engineering and Records Division Manager: Judy Jones; Parsons/Jacobs Associates Construction Manager: David Rendini; Parsons/Jacobs Associates Assistant Construction Manager: Ted DePooter. Contact: Dan Martz at (770) 941-9021.

### Atlanta

#### West Area CSO Storage Tunnel and Pumping Station

##### Atlanta CSO Constructors

The West Area CSO Storage tunnel and Pumping Station consists of 8.5 miles of 24-ft finished diameter tunnel with three intakes and a pumping station. Excavation was completed on the two TBM tunnels using two 27-ft diameter Herrenknecht TBMs. The North Avenue Tunnel was staged from the R.M. Clayton shaft and mined 23,600 lf to the North Avenue CSO intake. The Clear Creek Tunnel was staged from the Rockdale shaft and mined 20,600 lf to the Clear Creek CSO intake. The Tanyard CSO intake is connected to the Clear creek tunnel through a 400-ft long connecting tunnel. The Clear Creek Tunnel joins the North Avenue Tunnel at Rockdale shaft. The project also includes a section of drill blast tunnel connecting to an overflow structure at the RM Clayton Site.

Both TBM tunnels completed final lining concrete by using a portable concrete batch plant. In the Clear Creek Tunnel, the contact grouting work has been completed also in the North Creek tunnel. Currently, the crew is working on removing utilities and final clean up in the tunnels. All underground work has been completed in the Clear Creek and Tanyard sites. Shaft bottom final lining remains to be completed at Clear Creek, North Avenue and Tanyard sites. Construction of the 85 MGD Pump Station is

substantially completed by W.L. Hailey as a sub contractor to the ACC. All underground work will be completed by the end of October 2008 ready to accept water.

City of Atlanta: Construction Manager: Ken Johnston; Atlanta CSO Constructors -- Project Manager: Taro Nonaka; Assistant Project Manager: Darrell Liebno; Project Engineer: Koichiro Shimomura; Safety Manager: Barry Jackson, Office Engineer: T.J. Kobayashi; Tunnel Engineers: Stuart Sullivan; Raj Magam; General Superintendent: Jeff Early; Assistant Superintendent: Ray Beasley; W.L. Hailey & Company -- Project Manager: Randy Wiek. JDH JV -- Resident Engineer: Dave Beck; Project Engineer: Ron Davis; Chief Underground Inspector: Dave Mundis. Contact: (404) 352-9802 Ext. 210.

### Atlanta

#### Flint River Transmission Main Phase II Bradshaw Construction Corp.

Bradshaw Construction Corp. has been awarded a contract to construct a 1,040 ft long tunnel under a railroad and several city streets as part of a 11,000 ft 30 in. sewer project. Approximately 875 ft of the tunneling has been completed behind an Akkerman Model WM-60 TBM. The tunnel includes two 800-ft radius curves and is lined with 4-flange steel liner plate.

Area Manager: Eric Eisold; General Superintendent: Bob Welch; Project Engineer: Todd Brown.

### City of Cumming

#### Raw Water Intake III, Division I Bradshaw Construction Corp.

Bradshaw Construction Corp. completed a contract to construct a soft ground raw water intake tunnel under Lake Lanier in Cumming, GA by microtunneling. The 350-ft by 66-in. tunnel was constructed of epoxy lined steel casing serving as tunnel support and final carrier pipe. The MTBM was retrieved in the "wet" by a barge mounted crane. The intake tunnel is part of a pump station project adjacent to the reservoir.

Area Manager: Eric Eisold; General Superintendent: JR Beachy.

### Snellville

#### No Business Creek Tunnel & Pump Stat. Mole/Jay Dee/Kassouf/Murray Hill JV

Project consists of 16,000 lf, 12-ft diameter sewer interceptor/storage tunnel with 5 shafts ranging from 70 ft in depth to over 240 ft in depth and construction of a pump station and odor control facility.

Shaft 1 (40-ft diameter, 222 ft in depth) excavated by conventional methods is complete. Shaft 2 (24-ft diameter, 198 ft in depth) excavated by conventional methods is complete. Shaft 3 (24-ft diameter, 236 ft in depth) excavated by conventional methods is underway and should finish by late summer of 2008. Shaft 4 (10-ft diameter Caisson, 128 ft in depth) excavated by caisson methods is underway and should finish in the fall of 2008. Shaft 5 (24-ft diameter 78 ft in depth) excavated by conventional methods is underway although it has been stalled by a differing site condition. The 14-ft diameter by 330-ft long drill and shoot starter tunnel is complete.

The TBM was installed and launched in early September.

Project Executive: Rod R. Shoulders; General Superintendent: Norman A. Gray; Superintendent: Dick Sink; Caisson Superintendent: Carey Baird; Project Engineer: Jake Coibon; Office Engineer: Zach West; Equipment Superintendent: Mike Rule; Walking Boss: Randy Sink, Kelly Metcalf, Leonard Pace, Henry Williams; Gwinnett Co. Project Manager: Manoj Bhamini; Parsons Brinckerhoff Construction Manager: George Inlow; Brown and Caldwell Construction Manager: Roger Toebben. Key Subcontractors / Consultants: Lachel Felice & Associates, Reynolds, Inc. Headland Contracting, Inc. Contact: Rod Shoulders (440) 248-0616.

## INDIANA

### City of Lafayette

#### Pearl River Tunnel Triad/FKCI JV

The Triad/FKCI JV was awarded a contract from the City of Lafayette, Department Public Works for construction of a 2,000-lf tunnel 10-ft diameter with two work shafts and several drop shafts, miscellaneous sewer connections and a 42-in. microtunnel. The project started in the spring of 2008 and substantial completion scheduled for summer 2009. Tunnel excavation is being accomplished using a specialized compressed air digger shield.

Liner plates be utilized for initial support and cast-in-place concrete for the finished lining. A value engineering proposal to realign the tunnel at the North is being reviewed with the owner.

## KANSAS

### Kansas City

#### Turkey Creek Tunnel Rehab. Merco/Obayashi JV

Tunnel cleanup and restoration resulting from the severe flooding in May and June has been completed. Crews are currently installing a composite roof support system consisting of rock bolts, welded wire mesh, and fiber reinforced shotcrete.

Work is progressing well with the structural liner repair/replacement work. Completion of the downstream liner work is scheduled for December 2008, followed by reinstallation of the conveyance system and completion of the structural invert slab and contact grouting.

Project Sponsor: M.V. Mergentime, CQC; Ron Heater; Field Engineer: Chris Lemoine; Project Superintendent: Mike Levoy; Tunnel Supervisor: Joey Jennings; Tunnel Superintendent: Bob Alvarez; Safety Superintendent: Larry Stewart; PM Coordinator: Bob Schoen. Contact: Mike Mergentime (908) 730-8622.

## KENTUCKY

### Louisville

#### Riverbank Filtration Tunnel & Lift Stat. Mole/Jay Dee/Murray Hill/Kassouf JV

Project includes an 8,000-lf, 12-ft diameter fresh water collection tunnel with one 230-ft deep shaft, four caissons approximately 100 ft deep each, construction of a pump station and four horizontal collector wells.

Excavation of the work shaft and launch tunnel were completed early in 2008. The TBM was launched in March and currently 87 percent of

the tunnel is excavated and should be complete by the middle of September. Tunnel crews were stopped by several unexpected infiltrations of ground water; however the Owner, Engineer and Contractor worked through the differing site condition quickly and TBM mining has continued. All 4 of the caissons are complete. Three of the 4 blind drill drops are complete. Over 60 percent of the Collector Well laterals are complete. Cast-in-place concrete lining of the tunnel is expected to begin in early October.

Project Executive: Rod R. Shoulders; Project Manager: Gevan McCoy; Tunnel Superintendent: Mike Clingon; Shaft Superintendent: Terry Lowe; Concrete Superintendent: Denzel Young; Project Engineer: Alesia Shoulders; Walking Boss: Chris Stover; Owner's Project Manager: Kay Ball; Engineer's Project Manager: Steve Holtermann. Contact: Rod Shoulders (440) 248-0616.

## MASSACHUSETTS

### Dorchester

#### Dorchester CSO

##### Shank/Barletta JV

Project includes two miles of 19-ft excavated, 17-ft segment lined tunnel one pass lining from single shaft.

Tunneling operations with the EPB TBM were completed on Wednesday August 13, 2008, with the holing through into the retrieval shaft.

TBM removal, connections to previously installed drop shafts and final cleanup remain.

Chief Engineer: Scott Shylanski; Superintendents: Curtis Bahten and Jim Mulkey. Contact: Scott Shylanski Shylanski@aol.com.

## NEW YORK

### New York

#### East Side Access

##### Dragados/Judlau JV

The SELI double shield TBM has completed the first drive (top tunnel drive) 6,000 lf long the unit was backed out to the Y cavern where it will be re-launched for the final 4,000lf drive.

The Y cavern area is utilizing a Sandvik M6720 135 metric ton roadheader to excavate this area in preparation for the re-launch of the SELI TBM anticipated to be ready end of 2008.

The Robbins TBM has mined over 7,000 lf with approximately 350 lf to completion of the West top tunnel drive. The machine will be backed out 3,500 lf and will be re-launched to complete the 1,500 lf West bound tunnel. To accomplish the re-launch they will bulkhead the tunnel and place a concrete plug 50-ft long and portal in through he plug for the final drive through mixed face and rock.

The cross passages between the East and West tunnel are currently being started using drill blast and a hydraulic jumbo.

Project Executive: Jose Miguel Gonzalez; Project Executive: Pablo Diez; Project Manager: Don Hickey; Project Engineers: Joaquin Fernandez and Julio Velez; Job Superintendent: Denis O'Neill; Equipment Manager: Louis Sanchez; Survey Superintendent: Jim Skura; General Superintendent: Terry Beesley; Equipment Superintendent: Jim Disley. Contact: Don Hickey (718) 321-1818.

### New York

#### Water Tunnel #3 Stage 2 Contract 538C

##### Schiavone/Frontier-Kemper/Shea JV

On September 5, 2008, the concrete for last section of the 20-ft diameter tunnel was placed removal of the forms commenced on the 8th Grouting of the 20-ft diameter tunnel will start on the 19th. All 10-ft diameter portions of the tunnel have been inspected and have had respective punch lists completed. Shaft 26 utilities and topside structures are currently being dismantled and the site is being prepared for Subcontractor John P. Picone to start SS pipe installation.

Shaft 31B was completed in June with Shaft 27 and 28 coming to completion by the end of September, 2008, with Shaft 24 and 30 following in October and November 2008. Shafts 25, 32 and 33 work is continuing in the Distribution Chambers.

Schiavone — Director of Tunneling: Anthony Del Vescovo; Project Manager: Kevin F. Clark; General Superintendent: Dale Estus; Project Engineers: Florentino Sison, Mike Gorski, Rob Labbe; J.F. Shea — Shaft Manager: Shemek Oginski; Shaft Superintendent: Mike Jennings.

### Manhattan

#### Harlem River Tunnel

##### Kiewit Constructors Inc.

The project consists of two 165-ft deep circular shafts connected by a 675-ft long horseshoe tunnel. Bedrock in this part of Manhattan is white marble and found at a depth of approximately 70 ft below grade. Overburden at the shafts is a mix of sandy and silty soils with support of excavation in the overburden being secant pile walls.

Once in rock, conventional drill-and-blast techniques will be used. Initial rock support consists of 9-ft long swellex friction bolts and shotcrete in most areas, with 15-ft long swellex bolts being used in the soil/rock interface and turn under areas.

Following excavation, a continuous PVC lining will be installed. Subsequently, the entire tunnel and shafts will be lined with a final cast-in-place concrete lining. A few surface structures such as pulling chambers, a head-house and ventilation building will be installed for continued servicing of the utility tunnel.

Kiewit Team — Project Manager: Paul Beljan; Engineering Manager: David Hamilton; Tunnel Manager: Sean Menge; and Safety Manager: John Pettis. Contact: (402) 346-8535.

### New York

#### No. 7 Line Extension

##### Shea/Skanska/Schiavone JV

Construction of the No. 7 Subway Line Extension was awarded to S3II JV of J.F. Shea Skanska and Schiavone by the Metropolitan Transportation Authority in November 2007 and the NTP issued on December 13, 2007.

The contract consist of excavation of two 22.5 ft diameter tunnels, approximately 5,900 ft each, lining of 4,880 ft of each tunnel with pre-cast concrete segmental liners, 100 ft deep access Shaft A, cross-adit and two starter/tail tunnels 400 ft each; one station structure 1,200 ft long constructed in rock with two access shafts P and K and associated drifts; five cross-passages and 140 ft of twin cell box structure, existing tunnel retrofitting, invert lowering and underpinning.

Construction began in February 2008. By May 2008 Shaft A received secant piles excavation support, and soil was excavated, Site P was backfilled to grade and excavation of the shaft started by drilling and blasting in April 2008. Preparation work started at Times Square cover and cut construction area where the tunnels will connect to the existing No. 7 Subway. Major equipment was procured including cranes, loaders, drill jumbos, locomotives and muck cars, as well as two double-shields Herrenknecht TBMs.

Extension of No. 7 Line is a major component of Hudson Yards area development of West Side Midtown Manhattan. When completed, the 7 Line Subway will extend from its current termination point at Times Square to continue west along 41st Street and south along 11th Avenue, past the new station at 34th Street and 11th Avenue and storage tracks continuing down to 25th Street.

S3II Project Director: Jim Marquardt; Deputy Director: Mike Ryan; Assistant Deputy Directors: Carl Christensen and Lars Jennemyr; General Superintendent: Mike Jennings; Assistant Superintendent: Tom Gramza; Equipment Superintendent: Kelvin Sampson; Electrical Superintendent: Paul McNally; Director of Engineering: Jim Rosteck; Site Managers: Brian Jepsen, Shemek Oginski, Victor Paterno. Contact: Jim Marquardt 212-216-8500.

## NEW JERSEY

### Sayreville

#### Middlesex County Utilities Authority

##### Kenny Construction

On July 10, 2007, Kenny Construction was issued a NTP for the forcemain tunnel under the Raritan River in Sayreville. The \$41,150,000 project consists of two 80-ft deep slurry wall shafts on either side of the river and 3,900 lf of 15-ft, 6-in. diameter segmental lined tunnel under the Raritan River between the shafts. The refurbishment of a Lovat EPB TBM was completed by Kenny forces and shipped to the site. Compressed air interventions will be required to access the cutterhead. Once the tunnel is complete, 2 - 60 in. forcemains will be installed and partially encased leaving an access walkway above the pipes for inspection purposes.

Mobilization started in September. Bencor completed the installation of the slurry walls for the portaling out shaft and the extraction shaft on the opposite side of the river. Crews completed the excavation of both the launching and the extraction shafts in the wet followed by tremie plugs, curing and shaft dewatering. Crews set up the launching shaft with portal blocks and seals and completed TBM assembly in the shaft. The mining started in August and staged assembly of the trailing gear will be ongoing until completed TBM and trailing gear is installed. The TBM has advanced 90 ft to date with a February, 2009 completion anticipated.

Tunnel Division Manager: Ted Budd; Project Manager: Bob Rautenberg; Superintendent: Mike Quinn; TBM Specialist: Tom Peterson; Electrical Superintendent: Joe Johnson; Safety Manager: Matt Hadaway; Project Sponsor: Mike Smithson. Contact tedbudd@kennyconstruction.com.

## Nevada

### Las Vegas

#### Lake Mead Intake No. 3 Shafts & Tunnel Impregilo/Healy JV

This Design-Build Project for the Southern Nevada Water Authority was awarded to Vegas Tunnel Constructors in March, 2008, for \$447 million. The work includes 15,300 ft of rock tunnel to be mined with a convertible Herrenknecht TBM, capable of operating as a hard rock machine in open mode and as a full mixshield in poor rock and/or with high water inflows, and lined with 20-ft diameter precast bolted gasketed segments. The tunnel will be subjected to pressures of up to 17 bars. Also included is an access shaft 30 ft diameter by 600 ft deep, a new Intake Riser structure constructed 350 ft below the surface of Lake Mead, and miscellaneous site and ancillary work.

Project design is being undertaken by Arup USA in conjunction with Brierley Associates. The design process for the shaft is at 100 percent. Other design features are in progress.

Sitework of the project is nearing completion under subcontract to Granite Construction. Temporary electrical setup is nearing completion under subcontract to Henkels & McCoy.

Shaft sinking is underway. Excavation and final lining is complete to a depth of 110 ft as of early September. Concurrent excavation and lining work is continuing. Pre-excavation probing and grouting will begin very soon.

Design of the Herrenknecht hybrid TBM will be completed this month and long lead items have been ordered.

Project Director: Fulvio Castaldi; Project Manager: Jim McDonald; Construction Manager: Renzo Ceccato; General Superintendent: Red Blanchette; Plant Manager: Greg Cook; Equipment Superintendent: Bob Schaffer; Electrical Superintendent: Zefram Houk; Contract Manager: Douglas Adair; Safety Manager: Jackie Owens; QC Manager: James Grayson; Engineers: John Arciszewski, Bill Fetters, BG Kunz; Arup/Brierley leads: Don Philips, Jon Hurt, and Gregg Sherry. For SNWA, Construction Manager: Roger Rothenburger; Chief Inspector: Mike Byers. Contact: Jim McDonald, (702) 893-2300.

## North Carolina

### Charlotte

#### Briar Creek Relief Sewer Phase 1B Bradshaw Construction Corp.

Bradshaw Construction Corp. has completed a 700-ft long by 101-in. diameter rib-and-board tunnel that was originally designed as a 25 to 40 deep cut-and-cover trench. The tunnel was advanced with a 101-in. diameter digger shield. 60-in. diameter FRP carrier pipe was installed, blocked and grouted in the tunnel.

Area Manager: Eric Eisold; General Superintendent: Jerry Simon.

### Charlotte

#### Wachovia/Knight Theatre Tunnels Bradshaw Construction Corp.

Bradshaw Construction Corp. has just completed a design-build contract to construct two pedestrian tunnels under the streets of downtown Charlotte to connect a new performing arts center to underground parking. The work is part of Wachovia Bank's First Street Development Project. Teamed with Jenny Engineering Corp. of Springfield, NJ, a concept was developed including initial/final lining NATM and waterproofing and a cast-in-place floor. The shotcrete mix design included chemical additives to increase water resistance and a spray-on water proofing membrane was sandwiched in the tunnel lining.

The subsurface conditions included rock and mixed face tunneling with about 16 ft to 20 ft of cover. The 13-ft high by 16-ft wide finish horse-shoe shell will be fitted with an architectural finish corridor in a follow on contract.

Area Manager: Eric Eisold, General Superintendent: Bob Welch; Design Engineers: Prakash Donde & Iwona Tarchala (Jenny Engineering).

## OHIO

### Columbus

#### Big Walnut Augmentation Part 1 Rickenbacker Interceptor Jay Dee/Michels/Traylor JV

The tunnel has been cleaned and currently working on the installation of the Linabond lining required for the full length. Have completed approximately 50 percent of the lining. The project has been put on hold pending resolution of lining.

City of Columbus, Division of Sewerage and Drainage: Gary Gilbert, CE; City of Columbus, Division of Sewerage and Drainage: Tanya Arsh, Sewer System Engineering Manager; URS Corp. — Designer: Douglas Uhren and Tom Richardson; HR Gray — Construction Management: Robert Scott; Sr. Mgr: James Joyce; Lachel & Assoc. — Geotechnical Design: David Chapman and Glen Frank; Contractor, Jay Dee / Michels / Traylor JV — Project Manager: Michael DiPonio; Project Engineer: Mark Lafaze; Project Superintendent: Tim Awald. Contact: (614) 491-9551.

### Columbus

#### Big Walnut Sanitary Trunks Sewer Extension

##### City of Columbus Ohio

#### Kassouf/Mole/Murray Hill/Jay Dee JV

Pipe setting in the rock portion of the tunnel is complete and backfill grouting is underway. Mining of the soft ground portion of the tunnel is 50 percent complete.

All bottom portions of the shaft structures have been poured. Riser setting and backfilling is underway. Connector work is also underway.

Project manager: Robert J. Kassouf, Project Superintendent: Bill McFadden, Further Information Contact: Bob Kassouf (216) 651-3333.

### Marysville

#### City of Marysville Super Excavators

21,000 lf of 60-in. sanitary sewer, 14,800 lf in tunnel and 6,200 lf open-cut construction. The 14,800 lf of tunnel is broken down into twenty (20) drives with the longest being 1,056 lf. To date 3 drives for a total of 2,600 lf has been completed. The project allows for the abandonment of Marysville existing wastewater and transport sewage to the new treatment plant. The contractor is using an Akkerman MTBM-SL60 and MT860K keyhole jacking frame. This jacking frame was the first manufactured by Akkerman and previously used in Milwaukee

They are setting up for the 800-ft bore and only have four more drives left: Two 600 ft, one 300 ft and one 800 ft, which will start shortly.

Project Manager: Dave Schlosser Further information: contact Dave at 937-642-1393 or Greg Rebak.

## OREGON

### Portland

#### East Side CSO

#### Kiewit/Bilfinger Berger JV

Rosie successfully broke out of the third shaft (Steel Bridge) and is currently churning through the earth approximately 120 ft below and West of the Rose Garden Arena. To date, after 15 months of mining, Rosie and her crews have completed a total of 10,830 lf of mining out of a scheduled 28,000 lf.

Structure crews have recently finished up work on the River Street Shaft Phase 1 concrete and are now turning their efforts over to the Outfall (OF) 46 Diversion Structure Phase 2 concrete. The Phase 2 shaft buildout was completed at Alder, just in time for the micro-tunnel group to prepare for their next two drives from Alder to OF 37-1 and to OF 36.

The Taggart shaft has been fully excavated, leaving only McLoughlin and Port Center Way remaining. Excavation is also complete at OF 36, where crews recently installed a bypass pump-around and removed a 30-lf portion of the existing outfall pipe. Crews are also in the process of excavating a diversion at OF 28.

In June, the Precast Segment Plant casted their 24,000 segment (of 48,000 total), putting them over the half-way point.

Project Director: Bill Mariucci; Project Manager: Tom Corry; Safety Manager: Paul Weisheit; Quality Manager: Kevin Krank; Engineering Manager: Matt Bartlett; Site and Shaft Manager: Niels Kofoed; Tunnel Manager: Christof Metzger. Contact: (503) 290-7000.

### Sandy

#### Sandy River Conduit Relocation

#### Kiewit Pacific Co.

The Sandy River Conduit Relocation design-build project involves taking two existing conduits that are currently above ground crossing Sandy River and placing them in a 441-lf tunnel under the Sandy River.

Project includes a 30-ft diameter construction shaft to a depth of 85 ft.; two drilled 9-ft diameter shafts to a depth of 110 ft.; and a 13-ft diameter modified horseshoe tunnel that runs diagonally under the girth of the Sandy River. Before completion of all the shafts, the tunnel will be backfilled with cell grout and the site will be restored. A series of trenches will be placed at the surface connecting the existing pipes to the new underground conduits.

Once the conduits have been diverted to the new underground tunnel, the current pipe bridge will be dismantled in place and hauled off-site. Site work will begin in October 2008.

Project Director: Bill Mariucci; Project Manager: Jarrett Carlson; Safety Manager: Andy Koester; Project Engineer: Jim Brunkhorst; Construction Manager: Mike Hanley; Design Manager: Jon Kaneshiro, Parsons Water & Infrastructure, Inc. Information: (503) 253-0081.

## PENNSYLVANIA

### Pittsburgh

#### **Pittsburgh Light Rail Tunnels Obayashi/Trumbull JV**

Mass excavation has been completed. Cast-in-place concrete for the cut and cover structures is 80 percent complete and on schedule to finish in early 2009. Backfilling of boxes has begun.

The Herrenknecht 6.9 m slurry TBM completed the first 2200 ft bore July 10. The machine has been turned around in the receiving pit. Initial mining of the second 2200-ft bore resumed the end of August. Tunnel completion and connecting structures on track for Spring 2010.

Project Manager: Asao Nomura, Construction Manager: John Murray, Project Engineer: Shu Mino; Equipment Manager: Daisuke Sone; Tunnel Engineer: Kenji Yamauchi; Chief Field Engineer: Russ Pollard; Safety Supervisor: Mike Restani; QC manager: Al Dube, General Superintendent: Randy Marnhout; Tunnel Superintendent: Ron Klinghagen; Electrical Superintendent: Bruce Haught; Equipment Superintendent: David Propes. Contact: Paul Zick (412) 246-0325.

## WASHINGTON

### Bothell

#### **Brightwater — East Contract Kenny/Shea/Traylor JV**

The East Contract consists of the following major elements: 14,050 ft of 18'-10 in. EPB TBM mined tunnel using 16-ft, 8-in. ID bolted, gasketed precast concrete segments for a primary liner; installing and grouting 14,200 ft each of 48-, 66-, 27- and 84-in. diameter pipes inside the tunnel along with 3 runs of fiber optic cable; 2,430 ft of 72-in. diameter microtunnel including three shafts with structures; one intercepting structure (IS) to mine from that is 74-ft deep and 80-ft finished diameter with 130-ft deep slurry diaphragm walls, tremie slab and final concrete wall lining; one Influent Pump Station shell (IPS) 83-ft deep, twin 84-ft ID cells, with 160 ft deep slurry diaphragm walls, tremie slab, and final lining; two short 12-ft diameter connector tunnels; one extraction shaft (TPP) 40-ft deep by 40-ft wide and 140 ft long for connection to new treatment plant piping.

The site utilities and screen/sound wall fence were completed and the slurry wall construction for the IS shaft was completed by Bencor Corp. in spite of a six week setback due to an Operating Engineer Union strike against the ready-mix concrete suppliers in King County. Bencor completed the binocular twin 84 ft diameter shafts and center wall for the IPS shaft using 160-ft deep, 48-in. thick panels. The IS shaft excavation was completed and the 13-ft thick, 2,600 cu yd concrete tremie plug installed. The shaft was concrete lined back to the final diameter with all the portals installed. Northwest Boring assembled the microtunnel equipment and completed the first 850 ft drive from the IS shaft and vacated the shaft so the mainline tunnel equipment could be mobilized. The receiving shaft for the first microtunnel drive was completed (80 ft deep caisson) along with the second and third caissons for the remaining drives. All of the microtunnel drives have been completed and the shaft structures and required restora-

tion completed.

The 19-ft, 3-in. diameter Lovat EPB TBM was delivered to the site in September, 2007, and was partially assembled in the IS shaft for the launch of the ECT (East Combined Tunnel) 14,050-ft drive. Mining started and the trailing gear added as the tunnel advanced. The entire trailing gear (325 ft) was installed and the tunnel has advanced more than 11,000 ft with less than 3,000 ft to complete. Production has reached 550 ft per week mining two nine hour shifts including travel. Access to the cutterhead has required 48 psi air pressure for the interventions.

The IPS slurry wall binocular shaft excavation was completed in the wet and the 15.5-ft thick tremie plug pours (2,700 cu yd/each) completed for both lobes. Following the cure of the plugs, dewatering was started and the upper and middle struts poured in conjunction with the demolition of the common slurry wall. Crews completed the center wall demolition to the bottom of the bottom strut and completed the forming and pouring of the last strut. After the strut cured, the dewatering was completed and the final concrete lining of the binocular pump station started. Currently, the west lobe is completed with a mid-October completion of the east lobe anticipated. Concurrent with the completion of the east lobe will be the mining and lining of the Interconnecting tunnels between the IS and the IPS structures. Completion of the IPS and connector tunnels is anticipated in early November.

Crews have mobilized to the extraction shaft (TPP) for the tunnel at the new treatment plant site. Mining is anticipated to be complete in early November. This will be followed by the initial clean-up of the tunnel followed by the installation of the 56,000 ft of piping and 52,000 ft of fiber optic cable.

Tunnel Division Manager: Ted Budd; Project Manager: Mark Saylor; Project Engineer: Jake Taylor; Cost and Schedule Manager: Luminita Calin; QA/QC Manager: Eric Simonson, Grounding Conditioning Engineer: Tony Huphauf; Project General Superintendent: Rich Mascarello; Electrical Superintendent: Dale Wold; Warehouse Manager: Terry Walls; Safety Manager: Mike Sarlitt; Home Office Sponsor: Austin Cooney. Contact Ted Budd (847) 541-8200.

### Bothell

#### **Brightwater — West Contract Jay Dee/Coluccio/Taisei JV**

Currently the JV is in the launch mode with the 15 ft, 5 in. Lovat EPB TBM. The first rings were mined and installed on September 10, 11, and 12. Currently placing additional trailing gear and preparing to tunnel below a major BNSF RR tracks. The main shaft is 28-ft deep, 35-ft wide and 190-ft long. The portal eye is only about 60-ft from the RR right of way and has less than a tunnel diameter of cover, including the RR ballast. The muck will be removed from the heading with 11-cubic yard muck boxes and frames from Mining Equipment Company hauled by new Brookville 20-ton locomotives. At the shaft the boxes will be emptied onto conveyors to move to the muck bin for storage and draining, then conveyed to barges for disposal on the other side of Puget Sound.

The concrete segments are being fabricated

by CSI/Hanson, JV in Tacoma, Wash. All 21,100 lf of tunnel will be from the shaft portal at Point Wells in Richmond Beach, very close to the shore line of Puget Sound. Major subcontractors include Delta Technology Corp. for HVAC, J.P. Francis & Assoc. Inc. for Plumbing and Mechanical, United States Electrical Corp. of Washington for both permanent and temporary electrical work.

Managing Partner for the JV: Thomas S. DiPonio; Project Manager: Greg Hauser; General Superintendent: Tom McMahan; Project Engineer Glen Frank; Assistant Project Engineer Mina Shinouda; Tunnel Engineer: Hiro Uchida, Hirofumi Asano; Health and Safety Officer: Andrew Cook; Office Manager: Renee Halley, Micro Tunnel Manager: Bill Austell of Frank Coluccio Construction Co. Contact: Greg Hauser.

### Bothell

#### **Brightwater — Central Contract Vinci/Parsons/FKCI JV**

VPFK is 25 months into the construction of the 4 year, \$210M Brightwater Central Conveyance Tunnel Project. Work includes two 14.33-ft diameter segmental lined tunnels — one 21,100 lf (BT-3) and the other 11,600 lf (BT-2); both to be constructed using mix shield slurry TBMs.

The North Kenmore Shaft is the main work shaft. It is 100 ft deep and 54 ft diameter.

Both BT-2 and BT-3 TBMs have been launched from this shaft.

BT-2 Exits at the North Creek Shaft provided by Kenny/Shea/Traylor (East Contract) and BT-3 exits at the Ballingerway Shaft provided by VPFK.

Ballingerway Shaft is where JayDee/Coluccio/Taisei JV (West Contract) will remove their TBM.

The BT-2 TBM, "Helene", has advanced 4,450 ft (890 Rings) and the BT-3 TBM, "Rainier", has advanced over 2,850 ft (570 rings). Approximately 65 maintenance/inspection interventions have been performed on Helene and Rainier.

The Ballinger Way shaft excavation and waterproofing was completed in August, and the final concrete lining subcontractor has started the concrete lining.

Project Manager: Lionel Suquet; Project Engineer: Yvonnick Rescamps; General Superintendent: Francois Delille; BT-2 Superintendent: Rafik Karaouzene; BT-3 Superintendent: Pierre Pissouraille; Equipment Superintendent: Rod Bray; Electrical Superintendent: John Isacs. Contact: Dave Rogstad (296) 766-8106.

## WISCONSIN

### Milwaukee

#### **Elm Road Generating Plant — Cooling Water Intake System Kenny Construction**

The project is a design-build subcontract for Bechtel Corp., the design/build contractor for the \$2 billion plant for WE Energies (Wisconsin Electric) consisting of a lake water intake tunnel excavated in rock approximately 9,200 ft in length, 27 ft, 4 in. diameter of which 930 ft is to be lined to a finished diameter of 25 ft. Also included are two land based upshafts at 25- and 18-ft in finished diameter as well as a temporary construction shaft at 30-ft diameter. In addition, there are four offshore water intake shafts, 12-ft diameter, along with ancillary intake piping.

# North American Project Update

These shafts are 8,000 ft out in Lake Michigan. Part of the intake system includes a 250-ft long dike wall with an emergency bypass backup surface water intake system and an estimated 50,000 cu yds of channel dredging.

The initial dredging operation in the Intake channel was completed and the steel sheeting work in the existing inlet channel was installed. Excavation for the dyke wall construction complete as is concreting of the dyke wall with intake inlets, gates and screens.

Before flooding, marine crews completed the drilling and the installation of the vertical piping in the four drilled intake shafts. Dredging was completed and all of the vertical risers were connected to the previously installed risers below the lake floor followed by installation of manifold piping. This was followed by the installation of the intake screens to complete the installation of the Intake System. When the tunnel was flooded the divers removed the horizontal bulkheads in the intakes to complete the intake construction.

After the tunnel, intakes, riser shafts and the dyke wall were completed, the flooding of the tunnel followed. Incidental work and wrap-up change orders remain to be completed.

Tunnel Division Manager: Ted Budd; Project Manager: Paul McDermott; QA/QC Manager and Project Engineer: Tom Plinke; Design/Build Coordinator: Mike Smithson, Warehouse Manager; Chuck Hartman; Survey Manager: Rich O'Neil; Home Office Sponsor: Austin Cooney. Contact: Ted Budd (847) 541-8200

## Milwaukee

### Harbor Siphons Project

#### Shea/Kenny JV

The project consists of approximately 2,100 ft and 2,400 ft of 17-ft horseshoe drill and blast tunnel, with two 20-ft drop shafts and one 30-ft riser shaft.

The shafts range from 250- to 300-ft deep with approximately 190 ft of overburden which has to be frozen into the bedrock by contract. Also a frozen cofferdam of 80 ft by 250 ft for the various pipe connections.

The contract was awarded on May 22, 2006, and NTP the next day. Pipe installation in both the Scott & Barclay and Erie Street shafts has been completed and back filled with concrete.

Completed pipe installation in the all shafts and backfilled with concrete. Commenced excavation in the frozen cofferdam area, constructing three cells using the frozen ground between to act as a strut for support. Drilling holes in the shaft lining on grade with the excavation and using a hydraulic splitter opened the excavation in the lining to accept the five pipe connections in the shaft with the elbows and pipe to connect the shaft pipes with the existing pipes in the original shaft on Jones Island tying the new shaft and tunnels to the existing Pipes to the treatment plant. When all connections are made a window will allow time for connections to be made from the two tunnels crossing the river.

Vice President: Martin (Dutch) Vliegenthart; Office Manager: Bonnie Senkowski; Structure Superintendent: Jerry Straube. Contact: (414) 258-2510.

## Milwaukee

### Inland Storage System / N. 27th St. ISS extension

## Shea/Kenny JV

With the completion of the main access shaft the excavation of both the starter tunnel started and was completed in the mid summer of 2008. The TBM started arriving on site and assembly in the tunnel completed. Mining ahead slowly they added the trailing gear until it was totally in the tunnel. Mining operations commenced in early September and has advanced 160 lf.

The Mill Road Shaft has been pre-grouted and freezing completed starting shaft sinking operations placing the permanent concrete lining as the excavate. They have completed excavation and lining 160 lf in rock with approximately 137 lf left to invert. This shaft when completed will be utilized as the retrieval shaft for the TBM.

Project manager: Len Postregna, General Superintendent: Milan Jovanovick, Equipment Superintendent: Keith Walters, Office Manager: Bonnie Senkowski, Safety: Paul Pietsch, Project Engineer: Ken Schubert VP Area Manager: Dutch Vliegenthart. Contact: (414) 258-2510.

## Milwaukee

### Underwood Creek Relief Sewer

#### Michels Pipeline

2,100 lf of 48-in. RCP in tunnel. Mobilized on site at the George Hanson Golf Course in Milwaukee. Crews are assembling a newly manufactured Akkerman MT875K jacking frame and MTBM SL60. This job is replacing a portion of the existing Underwood Creek MIS with a 48-in. RCP. Contact: Laura Anderson (507) 567-2261 XT 157.

## CANADA

### ONTARIO

#### Vaughan-Region of York

### Bathurst and Langstaff Tunnels

#### McNally Construction Inc.

The project consists of three tunnels; Bathurst two tunnels 2,744-m (8.8-ft) diameter each 2.6 km (1.62-mile) long, Langstaff one tunnel 2,744-m (8.8-ft) diameter 3.2-km (1.987-miles) long.

Mining commenced on the first Bathurst tunnel January 2007. The first drive was completed in December 2007. The Bathurst tunnel progress with excellent performance with tunneling rates exceeding 120 in a week. Breakthrough of the second Bathurst tunnel was achieved on August 12, 2008. The TBM was removed and work is ongoing to complete the tunnels for handover to the region with all work on this section completed on schedule.

Mining commenced on Langstaff in August 2007 and progressing well. Subsequent to the incident in May 2008 on Langstaff Road when ground entered the tunnel and halted mining, work has commenced on a recovery shaft to facilitate the repairs to the tunnel. Ground improvement by means of an eductor system was installed and shaft sinking by secant piles commenced in August this year.

To mitigate delays a second TBM, made available on completion of the 19th Avenue contract was installed in the far end of the Langstaff tunnel and will mine back to the recovery shaft. Mining commenced Aug. 21 and is progressing well. Work is expected to be completed in the Spring of 2009.

Project Manager: Steve Skelhorn, Toronto

Area Manager: Tim Cleary. Contact: Steve Skelhorn (416) 252-6321.

## Sudbury

### Sudbury South-End Tunnel

#### McNally Construction Inc.

Project consists of 6.4km of 7-ft X 5-ft sewer tunnel excavated in hard rock by drill blast.

Currently eight headings have been developed with approximately 70 percent of the excavation completed to date. A delay was created with the loss of ground as they approached a creek and concrete was placed from a surface borehole to a form fabricated on site and mining continued. With completion of excavation the tunnels will receive a concrete lined invert. Completion is estimated in December 2008.

Project Manager: Dan McNally. Contact: Ray Hutton (905) 549-6561.

## Welland

### Welland OAS

#### McNally Construction Inc.

This project consists of 2.7km of 96-in. rib and lagging tunnel excavated in clay. To date one drive has been 1.4 km has been excavated and a 65-in. cast-in-place concrete lining being placed. The second drive 1.3 km long got underway in January 2008.

Project manager: Chris Banks. Contact: Ray Hutton (905) 549-6561.

## BRITISH COLUMBIA

### Ashlu Creek

#### Ashlu Creek Green Power Project

#### Frontier-Kemper Constructors

The Ashlu Creek contract is a design-build-operate-transfer, run-of-the-river hydroelectric project. It consists of an upriver diversion weir, drop shaft, transfer tunnel and downriver powerhouse. The weir diverts the part of the river into the drop shaft and tunnel which then conveys the water 4.3 km downstream to a powerhouse, and is finally discharged back to Ashlu Creek.

Frontier-Kemper's portion of the work includes the design and construction of a 130-m deep raise bored shaft and boring 4.41 km of 4.08m diameter power tunnel. The developer of the project, Ashlu Creek Investments (an Innergex & Ledcor partnership) issued Frontier-Kemper Constructors a NTP in August 2006. A 30-m long starter tunnel was excavated under a subcontract by a local contractor using drill-blast. The Wirth TBM was completely refurbished in the Evansville shops of Frontier-Kemper together with an entirely new backup system and delivered to the site and assembled in March 2007. Excavation commenced in late May 2007 and as of mid-September 2008 the 4.08-m Wirth TBM has excavated approximately 2,900 m of the drive total of 4,410 m. Tunnel excavation is scheduled to be completed in mid-January 2009 and will be followed by the excavation of the intake shaft using one of Frontier-Kemper's raise bore machines.

Project Manager: Serge Moalli; Project Superintendent: Richard Boutelle; Walkers: Jonathan Prenger; Jason Sale, Denis Lafrenière, Johnnie Thorn. Field Engineer: Dave Watson; Office Manager: Sandra Prenger. Contact: Steve Redmond (206) 766-8106.