CONCEPT DEVELOPMENT

The concept plans were developed around several goals stated by the County. The main goal was to limit the amount of right-of-way acquisitions, while also incorporating the safety recommendations and addressing any drainage concerns that could be determined with the limited drainage review.

The St. Johns County Public Works Department Engineering Division design details for minor (curb and gutter) and major (swaled section) collector road typical sections are shown on sheet 47. Both typical sections call for 12 foot travel lanes. During the conceptual design development stage it was discussed with County staff that in sections where the existing right-of-way was limited if the travel lanes could be reduced to 11 feet wide, it would eliminate the need for right-of-way acquisition from numerous parcels along the corridor. In order to make the concept plan more viable it was decided that in areas where the existing right-of-way was limited the travel lanes would be reduced from the County standards of 12 feet to 11 feet wide. When this project enters the design phase, if the 11 foot travel lane width option is pursued, a variance will be required for the deviation from the adopted County design standards. The urban and rural adopted County Standard Typical Sections are shown on sheet 47.

County staff stated that they were not limited to the location of the existing centerline of the roadway and the centerline could be adjusted to best utilize the existing right-of-way and to limit right-of-way acquisition. The safety recommendations that were evaluated would need to be incorporated and then the proposed typical section applied.

The right-of-way varies from 50 feet to 130 feet throughout the corridor, with much of the corridor having a 60 foot right-of-way width. Based on the wide variation of the right-of-way widths, it was determined that two different typical sections would be needed for the corridor. The main difference between the two typical sections is that one would have shoulders with swales and the other curb and gutter. This would allow an effective use of the existing right-of-way.

The safety evaluation determined that several left-turn and right-turn lanes were needed within the corridor. These needed turn lanes were considered and incorporated into the concept plans included in this report.

Based on the limited existing right-of-way and the recommendations of left-turn and right-turn lanes throughout the corridor, it was determined that a three-lane roadway typical section would be the chosen alternative. The three-lane section would allow the necessary left-turn lane storage and transitions lengths and a refuge for existing homeowners turning in and out of their driveways. During final design consideration should be given as to whether medians and/or traffic separators should be incorporated into the three-lane roadway design typical section.

Where right-of-way is limited, a curb and gutter typical section was applied. This would allow the sidewalk to be placed at the back of curb to reduce the typical section width and allow for tie-in to the existing elevation at the right-of-way. In areas where the right-of-way has a larger width, a typical section with shoulders was applied. This will allow more use of the right-of-way for drainage conveyance and allow the sidewalk to remain outside of the clear zone.

The drainage is proposed to be conveyed to ponds located in different locations throughout the corridor. Four potential locations for ponds were identified. In the southeast quadrant of the intersection of Longleaf Pine Parkway (CR 244) and Roberts Road, a pond could be constructed. This location would utilize existing County right-of-way that is not being used since the realignment of Roberts Road and Longleaf Pine Parkway intersection. This location would also allow the existing outfall location to be used within the existing right-of-way.

The next pond location was located at Station 63+00, across from Greenfield Drive. This location has a few options. Option A would be to model and evaluate the current stormwater management facility that is located west of Roberts Road to see how much additional storage could be obtained. This recommendation matches the results from the “Drainage Pond Evaluation Memo on Roberts Road Curve Realignment for St. Johns County”, completed by CH2M Hill on September 29, 2010. Option B would be to construct a new pond adjacent to Roberts Road and an outfall to the existing stormwater management facility.

The third and fourth potential pond locations are located at Station 110+00. At this location on the east side of Roberts Road is a large wetland area. The wetland area is blocked from flowing to the west by Roberts Road. Bypass pipes are shown to allow the wetland to overflow to the west. The pipes will be located to the south of pond location #3. Pond location #3 is a 1-acre lot between two existing houses. Pond location #4 is on the east side of Roberts Road. There is an existing pond that could be converted into a joint use pond and expanded.

All of the existing drainage easements need to be cleaned and maintained to allow for proper conveyance.

Throughout the corridor there are above ground utility poles that will need to be relocated due to their proximity to the edge of pavement and violation of clear zone distances. Some utility poles will have to be relocated due to the new alignment of the roadway.

It is assumed that the typical cross slope for Roberts Road will be 3 percent based on the County's adopted collector typical section. In addition, a super-elevation rate of 3 percent was used where a crowned section was not achievable based on the minimum curve radius per FDOT’s design standards. Curve data has been provided on the concept plans included in this report.

The proposed concept plans are graphically depicted on Sheets 48 through 119.

The project was broken into three phases for future implementation. Phase one would begin at STA. 111+00 and end at STA. 147+15. Phase two would continue from STA. 111+00 and end at STA. 58+00. Phase three would include STA. 58+00 to STA. 10+00. The intent would be for phase one to be implemented first, then phase two and the last phase would be phase three.
Longleaf Pine Parkway

Longleaf Pine Parkway is a major collector oriented in the north-south direction in the vicinity of the Roberts Road intersection. It is a two-lane roadway to the north and a four-lane divided roadway to the south of the intersection with a posted speed limit of 35 mph. The movements at the T-intersection are controlled by a traffic signal of diagonal box span wire design. The southeastbound approach is the southern limit of Roberts Road. Exclusive left-turn lanes are present in the southeastbound and northbound directions. The northbound left-turn movement operates with protected-permissive left-turn phasing and the southeastbound left-turn movement is permissive. The southeastbound right-turn lane operates as free-flow.

As summarized in Tables 4 and 5, the intersection currently operates at LOS A during the AM Peak Hour and LOS B during the PM Peak Hour, with all movements operating at LOS C or better. As summarized in Tables 8 and 9, the existing turn lane lengths on Roberts Road are sufficient to accommodate the existing traffic queues.

Needs:
- None
Roberts Road Typical Section - Sheet 51

**Pavement Design**
Friction Course - 9.5 (1.5")
Type SP - 12.5 Structural Course (2")
10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width
12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
Roberts Road Typical Section - Sheet 53

Pavement Design
Friction Course - 9.5 (1.5")
Type SP - 12.5 Structural Course (2")

10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width

12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
Roberts Road Typical Section
Section 'A' - Begins at STA: 21+15
Section 'B' - Begins at STA: 24+25
Section 'C' - Begins at STA: 24+75

Pavement Design
Friction Course - 9.5 (1.5")
Type SP - 12.5 Structural Course (2")
10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width
12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
Pavement Design
Friction Course - 9.5 (1.5")
Type SP - 12.5 Structural Course (2")
10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width
12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
Roberts Road Typical Section - Sheet 59

Pavement Design
Friction Course - 9.5 (1.5")

Type SP - 12.5 Structural Course (2")

10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width

12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
**Bedstone Drive**

The intersection of Bedstone Drive at Roberts Road is a two-way, stop-controlled T-intersection with Bedstone Drive being the west leg to the intersection controlled by a stop sign and Roberts Road operating as free-flow. This intersection was not counted and no operational analysis was performed. An exclusive left-turn lane is present in the northbound direction and an exclusive right-turn lane is present in the southbound direction. As summarized in Tables 8 and 9, the existing turn lane lengths are sufficient to accommodate the existing traffic queues.

**Needs:**
- None

**Pavement Design**
- Friction Course - 9.5 (1.5")
- Type SP - 12.5 Structural Course (2")
- 10" Limerock Base Course
- LBR 100/98% Maximum Density
  - Per AASHTO T-180
  - Primed Entire Width
- 12" Stabilized Subgrade
  - LBR 100/98% Maximum Density
  - Per AASHTO T-180

**Roberts Road Typical Section**
- Section 'A' - Begins at STA: 33+50
- Section 'B' - Begins at STA: 35+00
- Section 'C' - Begins at STA: 37+25
Roberts Road Typical Section - Sheet 63

Pavement Design
Friction Course - 9.5 (1.5")
Type SP - 12.5 Structural Course (2")
10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width
12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
Roberts Road Typical Section - Sheet 65

Pavement Design
Friction Course - 9.5 (1.5")
Type SP - 12.5 Structural Course (2")
10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width
12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180
Roberts Road Typical Section - Sheet 67

**Pavement Design**

Friction Course - 9.5 (1.5")

Type SP - 12.5 Structural Course (2")

10" Limerock Base Course
LBR 100/98% Maximum Density
Per AASHTO T-180
Primed Entire Width

12" Stabilized Subgrade
LBR 100/98% Maximum Density
Per AASHTO T-180