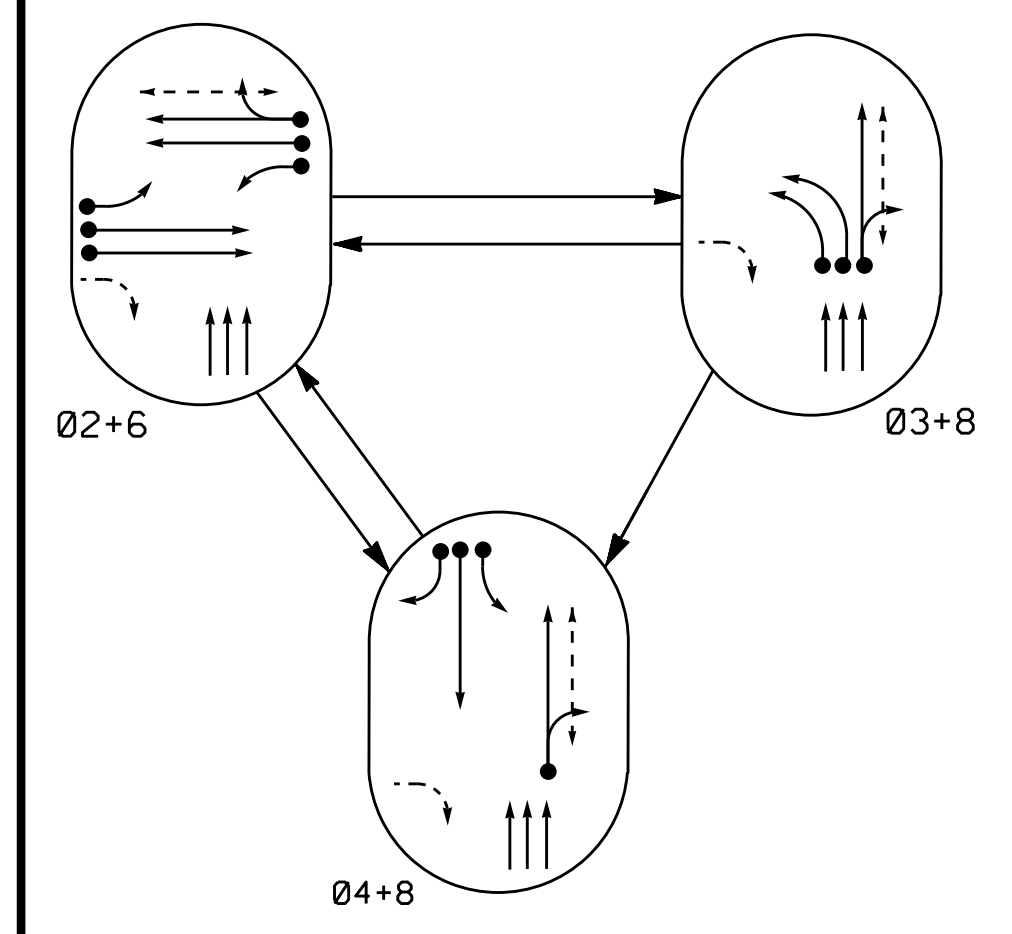
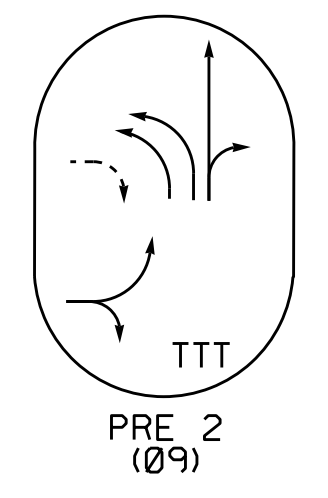


3 Phase W/EV Preemption Fully Actuated Fayetteville Signal System

PHASING DIAGRAM



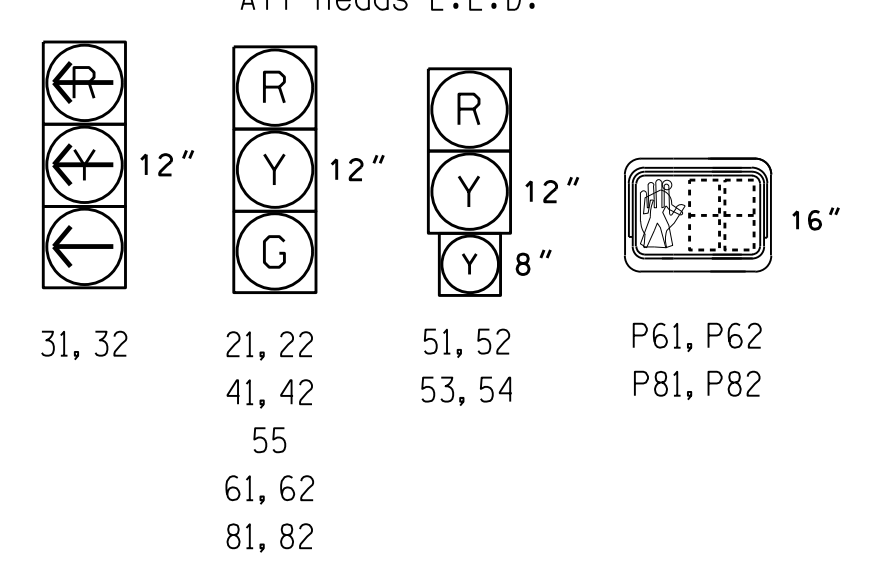
EV PREEMPT PHASES (Medium Priority)



| SIGNAL FACE | PHASE | | | | |
|-------------|-------|------|------|-------|-----|
| | 02+6 | 03+8 | 04+8 | PRE 2 | TTT |
| 21,22 | G | R | R | R | Y |
| 31,32 | R | R | G | R | R |
| 41,42 | R | R | G | R | R |
| 51,52 | FY | FY | FY | R | Y |
| 53,54 | FY | FY | FY | R | Y |
| 55 | FR | FR | FR | G | R |
| 61,62 | G | R | R | R | Y |
| 81,82 | R | G | G | G | R |
| P61,P62 | W | DW | W | DW | DRK |
| P81,P82 | DW | W | W | DW | DRK |

FY - Flashing 8" Yellow
FR - Flashing Red

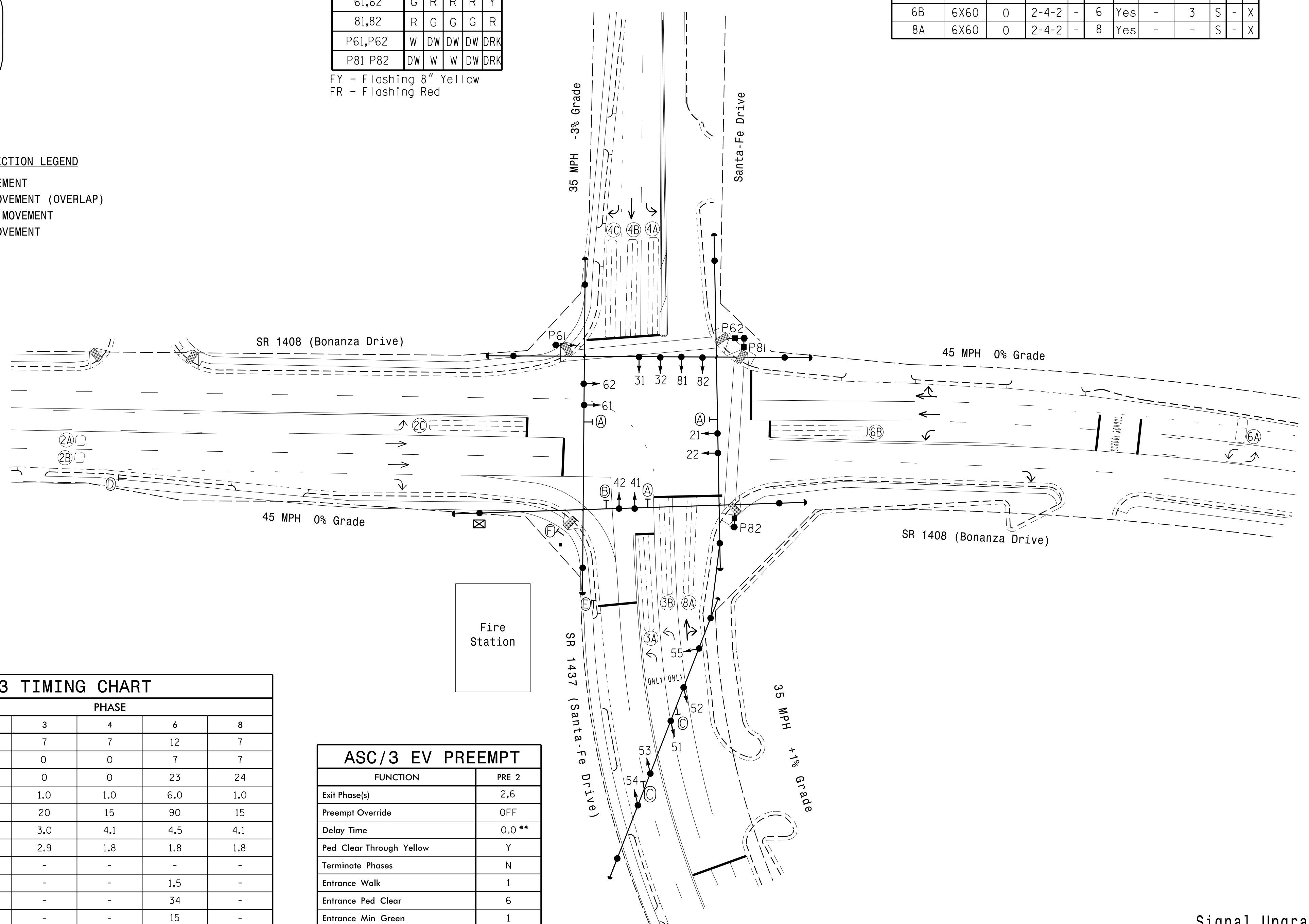
SIGNAL FACE I.D.



| ASC/3 DETECTOR INSTALLATION CHART | | | | | | | | | | |
|-----------------------------------|-----------|----------------------------|-------|-------------|-------|---------|-------------|------------|------|----------------------|
| DETECTOR | | | | PROGRAMMING | | | | | | |
| LOOP | SIZE (FT) | DISTANCE FROM STOPBAR (FT) | TURNS | NEW LOOP | PHASE | CALLING | EXTEND TIME | DELAY TIME | TYPE | SYSTEM LOOP NEW CARD |
| 2A | 6X6 | 300 | 4 | - | 2 | Yes | - | - | N | X |
| 2B | 6X6 | 300 | 4 | - | 2 | Yes | - | - | N | X |
| 2C | 6X60 | 0 | 2-4-2 | - | 2 | Yes | - | 3 | S | X |
| 3A,3B | 6X60 | 0 | 2-4-2 | - | 3 | Yes | - | - | S | X |
| 4A,4B | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | - | S | X |
| 4C | 6X60 | 0 | 2-4-2 | - | 4 | Yes | - | 15 | S | X |
| 6A | 6X15 | 300 | 4 | - | 6 | Yes | - | - | N | X |
| 6B | 6X60 | 0 | 2-4-2 | - | 6 | Yes | - | 3 | S | X |
| 8A | 6X60 | 0 | 2-4-2 | - | 8 | Yes | - | - | S | X |

PHASING DIAGRAM DETECTION LEGEND

- DETECTED MOVEMENT
- ◄ UNDETECTED MOVEMENT (OVERLAP)
- UNSIGNALIZED MOVEMENT
- ⇄ PEDESTRIAN MOVEMENT



- NOTES**
- Refer to "Roadway Standard Drawings NCDOT" dated January 2012 and "Standard Specifications for Roads and Structures" dated January 2012.
 - Do not program signal for late night flashing operation unless otherwise directed by the Engineer.
 - Set all detector units to presence mode.
 - In the event of loop replacement, refer to the current ITS and Signals Design Manual and submit a Plan of Record to the Signal Design Section.
 - Locate new cabinet so as not to obstruct sight distance of vehicles turning right on red.
 - The cabinet should be designed to include an Auxiliary Output file for future use.
 - Omit "WALK" and flashing "DON'T WALK" with no pedestrian calls.
 - Program pedestrian heads to countdown the flashing "Don't Walk" time only.
 - Pavement markings are existing.
 - Emergency vehicle preemption switch is located in the fire department
 - The Division Traffic Engineer will determine the Delay before Preempt and Preempt Dwell Min Green time for the emergency vehicle preemption timing.
 - Clear signal heads 51,52,53 & 54 from flashing 8" yellow to steady 12" yellow during interval 1 and steady red during interval 2.
 - Transition signal head 55 to preemption from flashing red by displaying steady red during interval 1 and 2. Clear signal head 55 out of preemption by displaying yellow during interval 1 and red during interval 2.
 - Program signal heads numbered 81 and 82 to clear to all red before going into preempt from 4+8.
 - Maximum times shown in timing chart are for free-run operation only. Coordinated signal system timing values supersede these values.

LEGEND

- | PROPOSED | EXISTING |
|------------------------------------|------------------------------------|
| ○ → Traffic Signal Head | ● → Traffic Signal Head |
| ◐ → Modified Signal Head | N/A |
| ⊥ Sign | ⊥ Sign |
| ⊥ Pedestrian Signal Head | ⊥ Pedestrian Signal Head |
| ⊥ With Push Button & Sign | ⊥ With Push Button & Sign |
| N/A Pedestrian Pedestal | ● Pedestrian Pedestal |
| ○ Signal Pole with Guy | ● Signal Pole with Guy |
| ○ Signal Pole with Sidewalk Guy | ● Signal Pole with Sidewalk Guy |
| ⊥ Inductive Loop Detector | ⊥ Inductive Loop Detector |
| ⊥ Controller & Cabinet | ⊥ Controller & Cabinet |
| ⊥ Junction Box | ⊥ Junction Box |
| N/A Wheel Chair Ramp | ⊥ Wheel Chair Ramp |
| N/A 2-in Underground Conduit | --- 2-in Underground Conduit |
| N/A Right of Way | --- Right of Way |
| → Directional Arrow | → Directional Arrow |
| Ⓐ Left Arrow "ONLY" Sign (R3-5L) | Ⓐ Left Arrow "ONLY" Sign (R3-5L) |
| Ⓑ Right Arrow "ONLY" Sign (R3-5R) | Ⓑ Right Arrow "ONLY" Sign (R3-5R) |
| Ⓒ "Fire Signal" Sign | Ⓒ "Fire Signal" Sign |
| Ⓓ "Fire Signal Ahead" Sign (W3-10) | Ⓓ "Fire Signal Ahead" Sign (W3-10) |
| Ⓔ "Stop Here On Red" (R10-6) Sign | Ⓔ "Stop Here On Red" (R10-6) Sign |
| Ⓕ "Freeflow Right Turn" Sign | Ⓕ "Freeflow Right Turn" Sign |

| FEATURE | ASC/3 TIMING CHART | | | | |
|-------------------------|--------------------|-----|-----|------------|-----|
| | 2 | 3 | 4 | 6 | 8 |
| Min Green * | 12 | 7 | 7 | 12 | 7 |
| Walk * | 0 | 0 | 0 | 7 | 7 |
| Ped Clear | 0 | 0 | 0 | 23 | 24 |
| Veh. Extension * | 6.0 | 1.0 | 1.0 | 6.0 | 1.0 |
| Max 1 * | 90 | 20 | 15 | 90 | 15 |
| Yellow | 4.5 | 3.0 | 4.1 | 4.5 | 4.1 |
| Red Clear | 1.8 | 2.9 | 1.8 | 1.8 | 1.8 |
| Actuations B4 Add * | - | - | - | - | - |
| Seconds / Actuation * | 1.5 | - | - | 1.5 | - |
| Max Initial * | 34 | - | - | 34 | - |
| Time Before Reduction * | 15 | - | - | 15 | - |
| Time To Reduce * | 30 | - | - | 30 | - |
| Minimum Gap | 3.0 | - | - | 3.0 | - |
| Locking Detector | X | - | - | X | - |
| Recall Position | VEH RECALL | - | - | VEH RECALL | - |
| Dual Entry | - | - | - | - | X |
| Simultaneous Gap | X | X | X | X | X |

* These values may be field adjusted. Do not adjust Min Green and Extension times for phases 2 and 6 lower than what is shown. Min Green for all other phases should not be lower than 4 seconds.

| ASC/3 EV PREEMPT | |
|------------------------------|--------|
| FUNCTION | PRE 2 |
| Exit Phase(s) | 2,6 |
| Preempt Override | OFF |
| Delay Time | 0.0 ** |
| Ped Clear Through Yellow | Y |
| Terminate Phases | N |
| Entrance Walk | 1 |
| Entrance Ped Clear | 6 |
| Entrance Min Green | 1 |
| Entrance Yellow Change | 25.5* |
| Entrance Red Clear | 25.5* |
| Minimum Dwell Time | 20 ** |
| Preempt Input Extension Time | 0.0 |
| Preempt Max Time | 0 |
| Exit Yellow Change | 4.1 |
| Exit Red Clear | 1.8 |

* Allows normal phase times to be used.
** See note 11

Signal Upgrade

Prepared in the Offices of:

 750 N. Greenfield Pkwy, Garner, NC 27529

SR 1408 (Bonanza Drive) at SR 1437/SR 2750 (Santa Fe Drive)

Division 6 Cumberland County Fayetteville
 PLAN DATE: March 2016 REVIEWED BY: JPB, PE
 PREPARED BY: EM Minshew REVIEWED BY:

SCALE 0 40
1"=40'

REVISIONS: INIT. DATE

DocuSigned by: Jason P. Gallaway 10/19/2016
 SEAL: JASON P. GALLAWAY, PROFESSIONAL ENGINEER, SEAL 029904
 SIG. INVENTORY NO. 06-0453

DOCUMENT NOT CONSIDERED FINAL UNLESS ALL SIGNATURES COMPLETED

05-0075-2016-11-150
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 J. Prudence