



Goldsmith, Prest & Ringwall, Inc.

Memorandum

To: Littleton Planning Board

From: Bruce Ringwall, Pres. GPR, Inc.

Date: December 4, 2019

Subject: Dennis Circle Intersection

Copy: Chris Stoddard, P.E.
Glavey Family Trust

During the hearing for Healy Corner at the Littleton Planning Board (LPB) meeting of October 21, 2019 the LPB asked GPR to review the proposed intersection location and discuss with Chris Stoddard, P.E. as well.

From a planning and design perspective GPR evaluates the surrounding existing conditions of the abutting roads, the associated grades, sight distances, types of roads and proximity to adjacent intersections. It is usually a goal to limit the number of intersections along a stretch of roadway if possible. By aligning a proposed road with an opposing existing street is typically better than creating a new offset intersection.

If the horizontal alignment works, then we evaluate the vertical alignment and sight distances. The Littleton Chapter 249 Subdivision of Land Regulations § 249-43 addresses design standards for street and paths. Subsection D (10) states, "Street intersections on all Collector and Arterial Street, including but not limited to ... Tahattawan Road... Harwood Avenue... shall be spaced not less than four hundred (400) feet apart." This is just one of the reasons GPR initially chose not to design Dennis Circle at the furthest eastern location.

GPR has revisited the Dennis Circle alignment: If Dennis Circle was to align with the eastern most portion of the property the offset distance would be 335± feet. This is less than the allowed amount in § 249-43 D. (10) of 400 feet. The traffic on traveling easterly on Harwood Ave / Tahattawan Road during the morning and peak hours are at 37 and 41 mph (for the 85th percentile). The creation of a new subdivision road a minimal distance from an existing intersection would create more conflicts for the passing driver to contend with. A driver entering from Tahattawan Road is currently rolling forward of the stop sign and looking over their shoulder to check on traffic coming east on Harwood Ave. As the driver enters Harwood Ave Dennis Circle would be within 250 feet of a car entering from Dennis Circle.

The Healy Corner Property is located between two intersections with skewed roads. GPR has tried to limit the number of roadway conflicts with the placement of Dennis Circle across

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from Tahattawan Road. The proposed location is aligned with the existing intersection. The slope of Harwood Ave approaching the existing intersection from the west is at 2.5% for roughly 220 feet. The proposed grading and associated tree removal will provide the required sight distance in both the east and west directions. GPR has looked at alignment of traffic from Tahattawan Road should it be directed to a more ninety-degree (90°) position. The attached working sketch plan indicates the ROW line is over 35 feet back (westerly) from the edge of pavement. Without changing the western edge of pavement and with the use of street markings and an additional sign the south bound Tahattawan Road traffic could be directed to a proper ninety-degree stopping intersection with Harwood Ave.

We have raised the issue of possible intersection locations with The Engineering Corp (TEC) the project traffic engineers. Asking if given the site and a clean slate where would the best location for a new intersecting road be located. I've attached their response for your review as well.

I met with Chris Stoddard, P. E. after the October LPB meeting and discussed the intersections and the alternatives. I also spoke with him just recently to confirm his thoughts on the street location.

Enc. Email from Sam Gregorio, PE, PTOE, RSP
Aerial Exhibit Plan
Working sketch of ROW

From: [Sam Gregorio](#)
To: [Bruce D. Ringwall](#)
Subject: Harwood at Tahattawan Road
Date: Wednesday, December 4, 2019 11:14:19 AM
Attachments: [image002.png](#)
[image003.png](#)
[image004.png](#)
[image005.png](#)

Bruce:

To follow-up on the Traffic Impact Assessment (TIA) prepared by TEC in September, I wanted to outline TEC's recommendation and thoughts for the location of the proposed driveway roadway and the intersection of Harwood Avenue / Tahattawan Road. Regardless of the intersection's skew, which TEC agrees is significant, it is preferable to align the proposed driveway directly opposing Tahattawan Road in order to consolidate vehicular conflict points to one location. A shift of the driveway to the east or the west creates a second point of vehicular conflicts and/or does so in proximity. In regard to traffic design, 'driver expectancy' is paramount; where a driver would normally expect in a rural area that major roadways (in this case, a subdivision roadway / driveway with more traffic than a standard residential dwelling driveway) to enter an intersection opposing other major roadways. The introduction of a new intersection could therefore effect driver expectancy negatively. It would be TEC's recommendation that the proposed driveway therefore enters Harwood Avenue directly opposite Tahattawan Road.

TEC understands the nature of the existing intersection layout; including the skew of the side-street approach and the current speeds as reported in the TIA. There are short-term, low-cost countermeasures that can assist in improving both operations and safety at the intersection separate from the proposed driveway approach. These include:

- Reapplying pavement markings to align the Tahattawan Road as a 90-degree angle with Harwood Avenue. This countermeasure has the added benefit to allow vehicles exiting Tahattawan Road to view Harwood Avenue to the west with normal head-turn / peripheral vision ... as oppose to a look of 160-degrees over the shoulder. The DYCL under this scenario should split so the southbound yellow follows the 90-degrees path and the northbound yellow follows the current alignment. A yellow hatching / gore would be added to the area between the two yellow markings. By keeping flush, there would be no added obstruction to plowing operations and/or fire apparatus / ladder turning movements.
- Install stop ahead (W3-1) signage along the Tahattawan Road southbound approach in advance of the intersection. Relocate the exiting stop sign around the corner to align with a new stop-line marking at the new 90-degree approach.

Other short-term, low-cost countermeasure that could be employed include installing scored concrete as opposed to the gore area noted about to provide a different texture to the no-traverse area. In addition, additional markings could be added to the northeast corner of the intersection to better define the Harwood Avenue westbound right-turn movement. A superior approach to this would be to remove pavement from the corner in place of grass to forcibly realign the intersection. Short of a full-scale intersection reconstruction, the removal of a small amount of pavement is

possible at a low/mid-cost. This would have the added benefit to reduce speed for the right-turn movement, which is elevated today.

Thank you for your consideration.

Sam

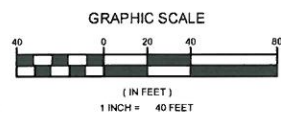
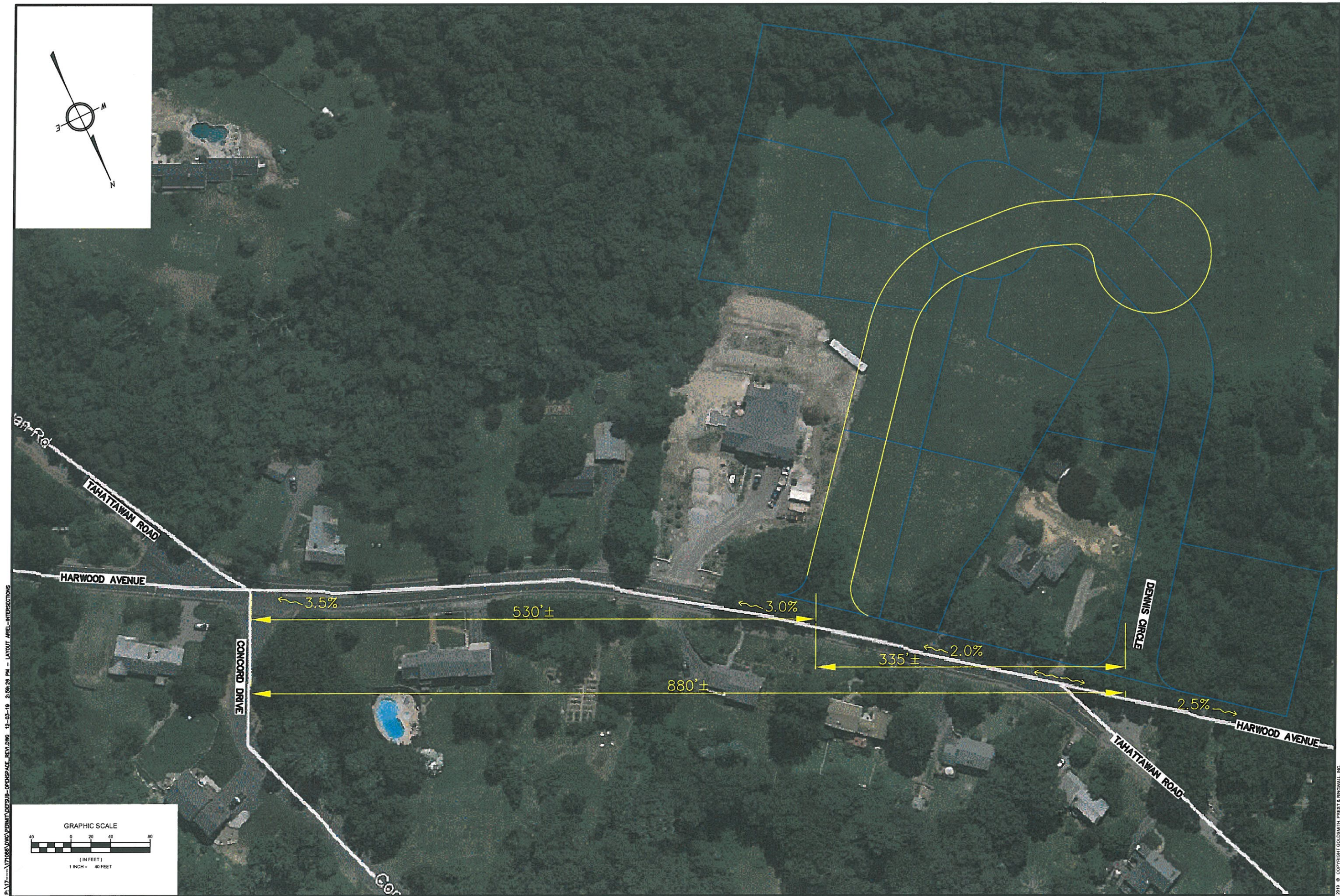
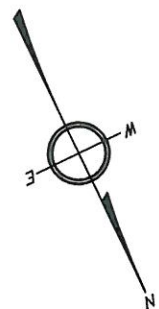
Samuel W. Gregorio, PE, PTOE, RSP₁

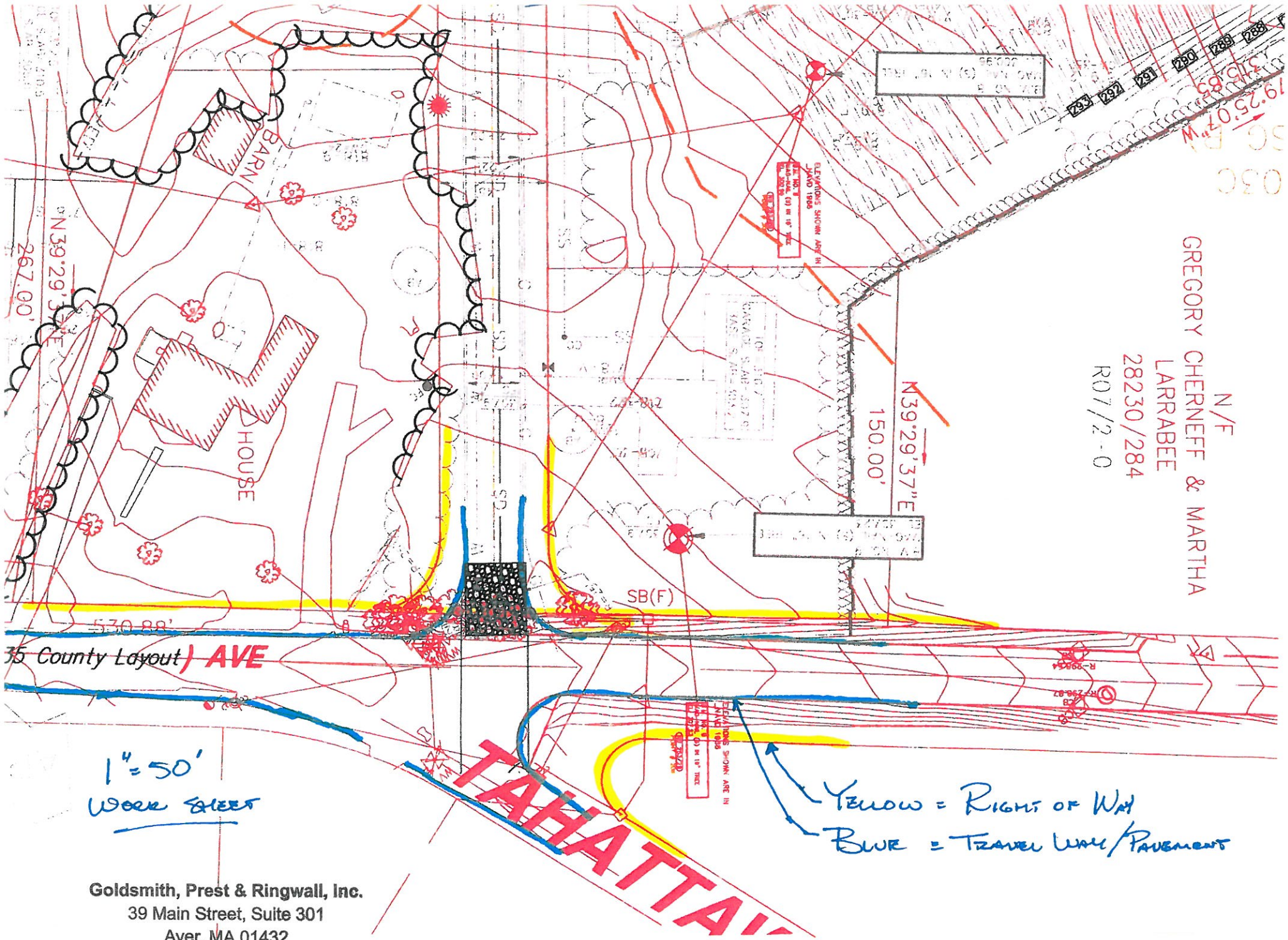
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1" = 50'
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Yellow = Right of Way
Blue = Travel Way/Pavement