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PLANNING DEPARTMENT
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TOWN OF YORKTOWN



March 30, 2023

Chairman Richard Fon
Town of Yorktown Planning Board
Albert A. Capellini Community & Cultural Center
1974 Commerce Street
Yorktown Heights, NY 10595

Underhill Farm
Town of Yorktown, Westchester County, New York
Colliers Engineering & Design Project No. 20006297A

Dear Chairman Fon and Members of the Planning Board:

The following items are in response to comments contained in the review document prepared by Transpo Group dated March 2023. The items are numbered according to their review comments. A revised Traffic Impact Study (revised TIS) dated March 30, 2023 has also been prepared addressing these comments.

2. Review of Accuracy of Technical Analyses

2.1 Development Program

The amount of proposed development is the core input used to calculate the amount of travel to and from the site (see next section), as well as the parking demand.

The EAF's Trip Generation analyses (see next section) account for a total of 20,000 square feet of non-residential development (9,500 sq. ft. Office; 5,500 sq. ft. Retail; 5,000 sq. ft. Restaurant).

The EAF's Parking adequacy analysis accounts for a total of 19,000 square feet of non-residential development (11,000 sq. ft. Retail; 7,000 sq. ft. Office/Retail; 1,000 sq. ft. Restaurant).

We recommend that the Applicant revise the analyses of Trip Generation and/or Parking Demand inputs to reflect consistency with one another as well as the proposed development program.

Response: The trip generation and parking adequacy portions of the EAF related to the non-residential portion of the development have been updated for consistency. The Traffic Impact Study is also now consistent with the proposed sizes for the non-residential portion of the development.

2.2 Trip Generation

The determination of the increase/decrease of trips on the road system uses an approach known as “trip generation”. This is a standard technique that draws on established relationships between amounts of development and number-of-trips, using the Institute of Transportation Engineers’ Trip Generation Manual (11th edition). The number of new trips generated by the proposed development is then used to determine the possibility of impacts on the roadway network and need for possible improvement measures.

AM and PM peak hour weekday trip generation rates are published by ITE for both the hour with the highest number of trips into/out of the development site, as well as the hour with the highest amount of traffic on the adjacent roadway. In general, the former of these two rates is the higher one. We recommend that the applicant provide both of these trip generation calculations.

Response: *Table No. 1 in the revised Traffic Study provides the traffic generation rates and estimated traffic volumes for the “Peak Hour of Adjacent Street Traffic” (peak highway hour) for all land uses. Table No. 1A also contained in the revised Traffic Impact Study provides the trip generation rates and estimated traffic volumes for “Peak Hour of Generator”. While it is our opinion that the traffic volumes provided in Table No. 1 associated with the “Peak Hour of Adjacent Street Traffic” are those that should be analyzed for the Project, since those are the volumes that will coincide with the peak traffic volumes experienced along the area roadways, the revised Traffic Impact Study now utilizes the somewhat higher traffic generation volumes associated with the Peak Hour of Generator rates provided by ITE. Note that for the residential portion of the development, the higher peak hour of generation rates were already utilized in the original analysis to be conservative. It should also be noted that the peak hour of generation for a restaurant typically occurs after the Weekday Peak PM Highway Hour. Therefore, it is our opinion that the analyses provided in the revised TIS are somewhat conservative.*

The applicant’s trip generation analysis uses a 40% credit for “pass-by” trips for the Retail and Restaurant uses. This refers to an estimate of how many of the trips entering/exiting the site to access these uses represent a stop as part of a longer trip, as opposed to a ‘new’ trip. A larger ‘pass-by’ credit has the effect of reducing the number of trips passing through nearby intersections, for which the applicant is responsible for possible improvement measures. NYSDOT typically permits a pass-by credit of 25%¹. We recommend that the applicant reduce the pass-by credit for the Retail and Restaurant land-uses from 40% to 25%.

Response: *The 40% pass-by credit for the retail use was developed based on ITE data, which as indicated by ITE for this size retail development can be even higher. Also, while NYSDOT typically limit this to 25% for “stand alone” retail developments, in a mixed-use development like this where the retail use is typically ancillary to provide convenience for the residents, an interplay credit is also typically applied as was done in this case. Thus, the remaining 15% credit (40% – 25% = 15%) was used to account for internal trips between proposed uses on the Site. Also, all residential generated trips were considered*

new, and no credit was taken for them staying “on site” and using the non-residential uses on the site, which is conservative.

Regardless of the above, Tables No. 1 and 1A contained in the revised TIS now reflect only the reduction of the “pass-by” trip credit at 25%. However, as noted in Section III.B of the revised TIS, the traffic analysis now analyzes the full traffic generation identified in Table No. 1A with no pass-by or internal credit assumed in the traffic analysis.

Finally, the applicant proposes to use the “Fine Dining” land use category (ITE code 931) for purposes of generating vehicle-trips to/from the proposed Restaurant on the site. The Trip Generation Manual contains published trip generation rates for various types of restaurants, with the Fine Dining trip generation on the lower end of the rates. We recommend that the applicant either provide documentation of enforceable mechanisms to ensure that the restaurant that ultimately occupies this space is consistent with the definition of the Fine Dining category, or revise the trip generation analysis to use a Restaurant category that reflects the reasonable worst-case scenario (i.e. higher trip generation rates) if the type of Restaurant that can occupy this site is as yet undetermined.

Response: *The restaurant use to be located in the existing Mansion building would be for a quality type restaurant and the Land Use Category – 931 “Fine Dining - Quality Restaurant” was used for these estimates. Appropriate restrictions could be placed as part of the site plan approvals to restrict this use accordingly.*

2.3 Analysis of Impact of “Potential Other Development”

The TIS presents traffic volumes which are asserted to account for potential other development in the Yorktown Heights hamlet, specifically: Roma Redevelopment, the redevelopment of the vacant former K- Mart and Food Emporium buildings, as well as the Commerce Street Hotel.

The documents reviewed do not contain the parameters of this analysis, specifically the assumed amount of development on each of these sites, the trip generation calculations, and the trip distribution approach.

We recommend that the Applicant provide this information documenting the trip generation and distribution analyses for “Potential other Development” so that it can be reviewed. This is important because it relates to the extent to which the Underhill Farms applicant or the developers of other sites are liable for making improvements to the road network (e.g. the improvement at the 118/Underhill Avenue intersection), which appears to be a part of the applicant’s proposal to contribute funds to cover only part of the costs of installing turn lanes at the Underhill Avenue/118 intersection.

Response: *Specific figures identifying the traffic volumes through the study area intersections associated with each of the approved and potential other developments considered are now provided in the revised TIS. A detailed summary of each of the other developments is also provided in the revised TIS as well as backup information from prior studies prepared for those projects or based on trip generation estimates prepared by our office.*

2.4 Trip Distribution

Trip Distribution refers to the directions (to/from roadway X to the east, to/from roadway Y to the north, etc.) that the generated trips will take to and from the development site.

We recommend that the applicant clarify which uses of the site (townhomes, condominiums, restaurant, etc.) are proposed to be accessed by vehicles turning into/out of the western (narrower) vs. the eastern (wider) proposed access points. It appears to us that a very large proportion of vehicles accessing the site are likely to use the eastern driveway, with the main (possibly only) users of the western driveway being the townhomes. There is also a discrepancy between the arrival/departure figures; for instance Figure 11 of the EAF claims that 10% of traffic leaving the site will turn left from the western driveway and 10% will turn right from this same driveway, whereas Figure 13 shows more than twice the number turning right versus left (15 vehicles vs. 7). Increasing the proportion of right-turning vs. left-turning movements at this intersection has the effect of both making the level of service at this access point calculated to be better, and reducing the calculation of this applicant's impact on Level of Service at the 118/Underhill Ave intersection. We recommend that the applicant confirm this apparent discrepancy and if necessary revise the analysis.

Response: *For ease of review, the revised TIS now includes separate distributions for the Townhouses and the Apartments/Condos/Commercial portion of the development. The capacity analyses have been revised accordingly.*

The EAF assumes that 15% of the site-generated vehicular traffic will access Underhill Farms through the proposed cross-access to Beaver Ridge, with 5% coming from Beaver Ridge itself, 5% from Allan Avenue, and the remaining 5% from Rt 118. In our opinion this 15% is a high estimate given the indirect routing through the Beaver Ridge property, and that it is particularly unlikely that 5% of the *vehicle*-trips will originate from the neighboring Beaver Ridge property. The effect of selecting a higher value for this item is to reduce the amount of site-generated traffic that is modeled as passing through the 118/Underhill Avenue intersection, and hence reducing this applicant's calculation of impact on this intersection. We recommend that the applicant substantiate the selection of 15% for this value.

Response: *The connection to Beaver Ridge has been designed to NOT be attractive for use by other potential "cut-through" external traffic and includes traffic calming measures throughout the development to ensure it is not used by external traffic. The 15% that was analyzed in the TIS equates to less than 25 vehicles during the highest hour, which would be representative of localized trips and trips between the two developments. Although unlikely to occur, a separate sensitivity analysis with no site traffic using this connection was completed to show all volumes accessing the site to and from Underhill Avenue and the potential impacts of such a condition.*

2.5 Intersection Capacity Analysis

“Capacity Analysis” refers to the calculation of the Level of Service (classified in letter grades A through F) at the site access points and potentially impacted intersections in the vicinity of the proposed development. Capacity analysis was performed by the applicant using industry-standard Synchro software. We recommend that the capacity analyses should be revised by the applicant to reflect the recommended changes to the Trip Generation analysis (see Section 2.2).

Response: *The capacity analysis was updated to reflect the trip generation changes suggested. They were also completed for the above referenced sensitivity analysis with the results summarized in the corresponding tables contained in the revised TIS.*

The eastbound approach of the Rt 118/Underhill Avenue intersection is modeled by the Applicant as having a single lane that accommodates through traffic as well as both left-turning and right-turning traffic. This is inaccurate: the right-turning movement is yield-controlled and currently is allocated a short dedicated turn lane. Based on aerial photography, it appears that eastbound right-turning vehicles can pass up to approximately three eastbound through/left-turning vehicles stopped at this approach’s stop line; see Figure 1. We recommend that the analysis be revised to reflect this channelized yield- controlled right turn. Using the applicant’s Synchro input files, this revision by itself appears to result in the calculated existing-conditions PM Level of Service at this intersection going from ‘D’ (40 seconds of delay) to ‘C’ (33 seconds of delay).

Response: *The eastbound approach has a short dedicated channelized right turn lane as noted; however, due to the limited length of this lane and the existing observed queues from the predominate through and left turn vehicle movements that occur on this approach during the PM Peak Hour, the ability and efficiency of this functioning as a dedicated right turn for vehicles is limited. Based on observations of existing peak hour operations, this short lane does not provide any noticeable capacity benefit. The traffic analysis contained in the revised TIS now accounts for the channelized right turn lane on the eastbound Underhill Avenue approach and the capacity analysis indicates that this channelized right turn does not provide a significant capacity benefit to the intersection due to queuing resulting from left turn and through movement vehicles.*

The applicant’s capacity analysis uses a value of 0.95 for the “Peak Hour Factor” (PHF) for all turning movements in the analysis. Values closer to 1.0 have the effect of resulting in calculations of better LOS, and lower values have the effect of resulting in calculations of worse LOS (note that the default PHF value in Synchro is 0.92, rather than 0.95). We recommend that the analysis be revised to include separate calculations of PHF for each turning-movement based on traffic count data, consistent with best practices as well as recent practice within Yorktown².

Response: *The PHF factors utilized in the traffic analysis have been reviewed and revised based on those identified by the collected traffic volume data for the study area intersection. However, we maintain that the use of the overall intersection PHF is appropriate based on guidance provided in the Highway Capacity Manual 6th Edition, which specifically indicates in both Chapters 19 & 20 for signalized and two-way stop control intersections that “If*

peak hour factors are used, a single peak hour factor for the entire intersection is generally preferred because it will decrease the likelihood of creating demand scenarios with conflicting volumes that are disproportionate to the actual volumes during the 15-minute analysis period”.

2.6 Scope of Traffic Analysis

The applicant’s traffic study for Underhill Farms does not analyze possible impacts to traffic flow at the “Triangle” intersection, which is the main bottleneck within the Yorktown Heights road system and is located approximately ½ mile to the north of the project site. It also does not consider the potential for possible impacts at the 118/Downing Drive intersection located between Underhill Farms and the Triangle intersection. The applicant’s offer of \$450K (see Section 2.7 below) towards traffic improvements appears to be focused on the Underhill/118 intersection and does not contribute to the cost of potential improvements at those other nearby intersections.

However, the applicant’s analysis does consider traffic from other potential development sites in the vicinity of the Triangle intersection, including sites on the other side of it (specifically the Roma Building located immediately north of it), making the argument that this traffic contributes to the need for improvements at the Underhill/118 intersection. The Roma Building’s 2018 traffic study likewise did not analyze the intersection of Underhill/118.

Response: *It was requested by the Town, the analysis of the Underhill Avenue/Route 118 and Route 118/Kear Street intersections consider the effects of traffic from other approved or potential projects in the area. The amount of the peak hour project generated traffic at the Triangle intersection is projected at approximately 30 to 40 vehicles during the highest peak hour, which represents less than 2% of the volumes at that intersection and would not require a separate analysis.*

It is also note that the number of vehicles projected to traffic through the Triangle intersection is less than the NYSDOT and ITE threshold of 100 site generated trips on any one intersection approach for needing off-site intersection analysis. This guidance was developed as a tool to identify locations where the magnitude of traffic generated has the potential to impact operations at offsite intersections and screen out locations from requiring detailed analysis that do not reach the 100-vehicle threshold indicating that additional detailed intersection analysis is not needed and that the site generated traffic will be accommodated by the existing roadway network.

2.7 Applicant's Offer of \$450K Towards Improving Underhill/118 Intersection

The EAF proposes a set of improvement measures that does not include adding turn lanes to the Underhill/118 intersection and concludes that with the smaller proposed improvement measures in place traffic associated with the Underhill Farms site will not cause significant impacts. We recommend that the applicant revise the traffic analysis as set forth in this report, which will provide the information needed to form a view of whether we concur.

In the EAF, the applicant offers \$450K to Yorktown towards the costs of improving the Underhill/118 intersection by adding turn lanes to some movements which currently use lanes that are shared with through traffic. Specifically, two improvement options have been presented:

- 1) Alternate 1 (cost estimate of \$800K prepared by the applicant): Adds left turn lanes eastbound and westbound and a right turn lane southbound.
- 2) Alternate 2 (cost estimate of \$1.5M prepared by the applicant): Same as Option #1, but also adds left turn lanes northbound and southbound.

As context, the complementary eastbound left and southbound right are the heaviest turning movements at this intersection (at 363 and 231 vehicles/hour, per the applicant's analysis of Existing Conditions). All other turning movements that would be provided additional turning lanes under these Alternates 1 or 2 are much lower (none exceeds 40 vehicles/hour in Existing Conditions).

The applicant argues that existing traffic congestion (LOS) at this intersection would be substantially improved by either of the Alternates. For illustrative purposes: if the applicant's traffic analyses were to be accepted by the Town as-is (notwithstanding the issues identified in this review), the improvement in traffic flow at this intersection would be noticeable (LOS 'B' after construction of the smaller 'Alternate 1' set of improvements vs LOS 'D' today, as claimed by the applicant). The detailed result will vary pending resolution of the technical issues, but this general conclusion appears unlikely to change.

We recommend the following with respect to this offer:

- 1) We recommend that the applicant provide documentation demonstrating its calculation of the \$450K offer towards improvements at the Underhill/118 intersection.
- 2) We recommend that any cost estimate for the Underhill/118 intersection that underpins the proposed \$450K contribution be revisited, in light of large unanticipated highway construction cost increases that have occurred post-pandemic. As context, USDOT's national highway construction cost index increased 37% from Q4 of 2020 to Q2 of 2022 (latest published data³).
- 3) We recommend that the applicant's revised traffic analysis form the basis for determining whether the proposed development would have traffic impacts, which may conclude that the Underhill Farms developer is required to add turn lanes as an appropriate improvement.

Response: *The analysis has been revised as requested to reflect the changes in trip generation, etc. The Underhill project peak hour traffic represents less than 5% of the Route 118/Underhill Avenue intersection volume.*

We note that TranspoGroup has prepared a separate detailed analysis of the cost estimates prepared by our office for the offsite traffic improvements as contained in their memorandum dated March 21, 2023. A detailed response to the comments contained in that memorandum will be provided by our office under separate cover.

Finally, the applicant's traffic engineer has provided the detailed information (quantities and unit costs) that were used to develop the applicant's \$800K and \$1.5M cost estimates referenced above. Transpo is now reviewing this data and preparing updated cost estimates; we will provide this analysis via separate memorandum.

Response: We note that TranspoGroup has prepared a separate detailed analysis of the cost estimates prepared by our office for the offsite traffic improvements as contained in their memorandum dated March 21, 2023. A detailed response to the comments contained in that memorandum will be provided by our office under separate cover.

2.8 Traffic Signal Upgrades

In the EAF the applicant proposes to purchase communications modems, camera actuation, and adaptive software for the traffic signals at Underhill Avenue/118 and 118/Kear/Allan. We recommend that the applicant provide the specifications for these proposed items.

Response: The specific traffic signal equipment proposed to be provided includes the following listed NYSDOT Item Numbers

- *Item No. 680.08110008 – Install Internet Service for Traffic Signal - Modem Only*
- *Item No. 680.05010007 – 360 Degree Camera Video Detection System*
- *Item No. 680.94997008 – Furnish and Install Electrical Disconnect Generator Transfer Switch*

Note there is no specific NYSDOT item number for Adaptive Traffic Signal Software. If required by NYSDOT the Synchro Green Adaptive Traffic Signal Software license will be purchase and installed at the signal in coordination with NYSDOT.

2.9 Feedback from NYSDOT

We understand that NYSDOT has been invited to provide comments on the applicant's traffic analysis and has indicated that it would do so, but this feedback has not yet been provided. NYSDOT's feedback will be an important input to the revised traffic analysis, given the site's adjacent to the state highway network.

Response: Discussions have been held with NYSDOT residency engineers as well as Region 8 representatives, together with the Town, to discuss the Project and the procedures for implementation of the traffic improvements. The Applicant will continue to coordinate with NYSDOT and the Town in order to advance the offsite improvement plans.

2.10 Parking

As noted in Section 2.1 above, the parking analysis uses 1,000 square feet as the size of the restaurant, rather than the 5,000 square foot restaurant size which is used in the Trip Generation analysis. This and any remaining discrepancies needs to be reconciled in order to reach a determination of the adequacy of the proposed parking provision.

Response: *The traffic study and parking analysis are now consistent and reflect the current Project proposal.*

The EAF proposes shared-parking between the residential and retail uses on Underhill Farms, as well as between the residential use on Underhill Farms and the Senior Center located immediately adjacent on the Beaver Ridge property.

We recommend that the applicant provide calculations to demonstrate that the amount of shared parking that is proposed is reasonable given the time-of-day/day-of-week parking profiles of the respective land uses.

We also recommend that a shared-parking plan be provided by the applicant which describes any signed parking restrictions on the Underhill Farms site, as well as management/enforcement mechanisms (including for parking that would be located on Underhill Farms property and shared by residents of Underhill Farms as well as users the senior center on the Beaver Ridge property).

Response: *The Project is fully parking compliant per the Town Code. The use of shared parking for the proposed senior center on the Beaver Ridge property is no longer proposed.*

The condominium building proposes tandem parking. It would be reasonable to expect that residents of the Condo building may seek to avoid using the 'inner' tandem parking spaces in which the parked vehicle will be 'blocked in', and instead to use the nearby surface parking which does not require moving one of their cars to access another. Another issue with the proposed tandem parking is that the average provision of parking is 1.5 parking spaces per unit in the condo-building, but it would be necessary for two tandem parking spaces to be controlled by the same household. Does this mean that some units will be marketed as having two private parking spaces and others will be marketed as only having one parking space? If so, would there be mechanisms to prevent condo residents allocated one parking space from parking in parking spaces intended for other uses on the site? We recommend that the applicant clarify.

Response: *Tandem parking is regularly implemented for multi-family developments. It is noted that ITE Parking Generation data indicates that the average parking demand ratio for multi family housing is 1.2 to 1.3 spaces per dwelling unit, which will be less than the 1.5 spaces per dwelling unit provided. It is also possible that some of the condo units will be designated as senior housing units which ITE data indicates a much lower parking ratio of 0.61 spaces per dwelling unit.*

3. General Observations

3.1 Proximity of Underhill Farms' Main Building to the Portions of the Hamlet East of Rt 118

The site layout as proposed shows a double-loaded parking aisle between the primary mixed-use building and Rt 118. Ideally in a hamlet environment, to support pedestrian connectivity the on-site parking would be provided to the rear of the buildings rather than along the street frontage. This would be consistent with Yorktown's Comprehensive Plan's vision⁴ that the Town's hamlets "become more pedestrian friendly". Placing the main buildings closer to Rt 118 would enhance pedestrian connectivity between Underhill Farms and the portions of the hamlet to the east of Rt 118. It would, however, require that circulation and building placement be substantially modified.

The EAF states that sidewalks are proposed by the applicant along the site's frontage from Glenrock Street to Allan Avenue. This is consistent with the Town's Comprehensive Plan's vision that the Town's hamlets should become more pedestrian-friendly. We note that this proposed sidewalk network is not typical layout of sidewalks fronting close to the roadway; the proposed sidewalks are less direct and require crossing the internal streets. We recommend that:

- 1) Consideration be given to including a sidewalk connection along the southern curblineline of the internal roadway to the south of the main mixed use building (highlighted by purple arrow in Figure 2.) This would allow pedestrians walking along this segment to avoid two crossings of this southern internal roadway.
- 2) The sidewalk network appears to be proposed to be located on private property at distance from the public right-of-way. It should be confirmed that the sidewalks between Glenrock and Beaver Ridge/Allan will be made accessible to the public at all times (or any restrictions clarified).

Response:

1. *A sidewalk connection between the southern curb line and the internal roadway to the south of the main mixed-use building will be added to the final site plan as requested.*
2. *Appropriate easements on the Underhill property will be provided relative to the sidewalks connecting to Beaver Ridge and Glenrock so that they can be accessible by the public at all times.*

3.2 Access Roadway Near Northwest Corner of Main Building

The red circle drawn in Figure 2 highlights the northwest corner of the main proposed building, where the main loop access roadway is near to this corner of the building. We recommend that the applicant confirm that the line of sight for drivers using this roadway is adequate to safely avoid colliding with a person walking on the loop roadway, taking into account the obstruction to view from the building corner. It appears that one speed table is proposed in this area along the north-south roadway segment at the end of this curve; it may be desirable to include another on the east-west segment at the beginning of this curve. It appears that sidewalks are not proposed along the red-circled section of the loop roadway. We recommend that they be considered at this portion of the site -- this would for instance enhance pedestrian connectivity between the senior center and the proposed recreation area around the lake.

Response: *The line of sight for drivers to see pedestrians will be detailed on the final site plan to ensure that there are no obstructions and that adequate sight lines are provided. Additional traffic calming measures will be incorporated into the final plan to address this comment. Additional sidewalks will be provided along the loop roadway as per the input and direction of the Town.*

3.3 Pedestrian Connectivity to Beaver Ridge at Northwest of Underhill Farms Site

Policy 3-11 of Yorktown's Comprehensive Plan encourages cross-access arrangements.

A cross-access roadway is proposed by the applicant at the northeast of the site, connecting to the Beaver Ridge site. However, no connections from Underhill Farms to the north are proposed at other points.

Figure 2 above also shows two red arrows which depict possible locations for pedestrian/trailway access to Beaver Ridge. The western of these arrows is at the location of an existing disturbance dating to at least 1990 (per the County's aerial photography) which appears to have previously provided cross-access between these two properties onwards to Underhill Avenue.

Cross-access arrangements, even if limited to pedestrians and possibly cyclists, can avoid long, inefficient routing that is undesirable in a hamlet context.

We recommend that the Town discuss with the applicant whether cross-access concepts such as those indicated in Figure 2 are practical.

Response: *Additional cross access connections would be at the discretion of Beaver Ridge.*

3.4 Intersection of Cardinal Court and Underhill Avenue

We understand from discussions with Yorktown's Planning Department that Cardinal Court was once a through-roadway which was converted into a cul-de-sac when the present-day Rt 118 was built in the mid-20th century. Cardinal Court has two single-family homes located along its west side, for which the access onto Underhill Avenue is the only means of access.

The distance between the Underhill Avenue/118 intersection and the Underhill Avenue/Cardinal Court intersections is ~140'. Per the Synchro analysis provided by the applicant (which is subject to revision, as noted above), their estimate is that in the Existing Conditions analysis the 50th-percentile queue length on Underhill Avenue approaching Rt 118 is 185' in the PM peak hour. Because this exceeds the 140' spacing to Cardinal Court, this means that during more than half of the cycles of the traffic light during the PM peak hour eastbound traffic is queued up past Cardinal Court. This condition then would become exacerbated by the additional traffic that would pass through this intersection when Underhill Farms is built.

In drawings included in the TIS, the applicant proposed "Do not block the box" striping (large white 'X' striped onto the pavement, along with new signage) at both points of access to Underhill Farms on Underhill Avenue. We recommend that similar treatment be considered for Cardinal Court.

The intersection of Cardinal Court and Underhill Avenue is a difficult location, due to the proximity to the traffic light at Rt. 118, it would remain difficult if a turning lane is added onto Underhill Avenue that would widen Underhill. Alternative options for improving access to Cardinal Court may include providing a connection from Cardinal Court onto Rt. 118 to the south of Underhill Avenue and converting the intersection of Cardinal/Underhill to right-in/right-out, however this would be a larger and more complex project. For instance, if an opening were provided from the southern end of Cardinal Court onto Route 118, it would be at a sharp angle, and a roughly 10' change in elevation down to Rt 118 would need to be traversed.

Response: *The positioning of Cardinal Court is fixed. A potential connection to Route 118 may not be practical since NYSDOT eliminated any connections when that section of Route 118 was constructed. See enclosed NYSDOT Record Plans. This would be a NYSDOT decision. The number of trips associated with Cardinal Court are limited. The plans now include the "Do Not Block the Box" striping, as requested. The proposed improvements are expected to help conditions at Cardinal Court during certain times of the day by reducing some of the queues; however, the left turn movements in and out would still be difficult with or without the improvements. Any other changes, including a connection from Cardinal Court to Route 118, would be subject to Town and NYSDOT approvals.*

3.5 Internal Intersection Immediately East of the Lake

The site plan shows a proposed internal street intersection in close proximity to the intersection of the main site access with Underhill Avenue (highlighted in the purple circle in Figure 2).

We recommend consideration of aligning this intersection to be approximately a 90-degree intersection. In addition to avoiding introducing a skewed intersection and potentially reducing impervious coverage, this would also have the additional beneficial effect of moving it further away from the intersection with Underhill Avenue. This would, however, mean reconfiguring the parking spaces on this portion of the site. Alternatively, the main loop roadway which is currently proposed for two-way operation could have one-way operation which would eliminate turning movements from this intersection entirely.

Response: *The two-way operation of the circulation road is proposed to provide efficient traffic flow and will not create undue travel distances for vehicles, which would occur with a one-way operation. The alignment of the internal intersection will be adjusted slightly as part of the final site plan to address this comment.*

3.6 Possibility of Access onto Rt. 118

Underhill Farms is a corner property, fronting both Underhill Avenue and Rt 118, with the latter under the jurisdiction of NYSDOT. Pursuant to discussions with Yorktown's Planning Department, we understand that NYSDOT has acquired easements that would prevent properties fronting Rt 118 from providing access points onto Rt 118, including Underhill Farms.

An access point onto Rt 118 which could be as far as ~250' (and/or could be right-in/right-out) from the Underhill Avenue intersection appears unlikely to adversely affect the safety or efficiency of

traffic flow on Rt 118 and would help reduce the amount of traffic traveling through the problematic Underhill/118 intersection. Rt 118 in this area is straight and level, with good sight lines in all directions. We recommend that the pros/cons of possible secondary access onto Rt 118 be revisited with NYSDOT, to ascertain whether NYSDOT agrees.

Response: *Route 118 is a controlled access highway. The intersections that are currently along this stretch were determined by NYSDOT when the roadway was constructed. Additional points of access are not permitted because of the "without access" designations. See enclosed NYSDOT Record Plans. Any connection to Route 118 would require a break in access to be approved by NYSDOT. In addition to this, it should also be noted that NYSDOT general policy is to limit the number of curb cuts when possible. The proposed improvements at Route 118 and Underhill Avenue would accommodate the traffic and introducing additional vehicular movements on Route 118 would not seem to provide any benefit even if there was no access restriction.*

3.7 Provision for Deliveries

We recommend that the provision for deliveries by truck (both to the retail/office/restaurant uses as well as parcel-deliveries to the residences) be clarified. This includes loading locations for both main buildings, anticipated number of truck movements per day, maximum size of delivery vehicles anticipated on-site, and ensuring that this vehicle can navigate the curve on the internal roadway at the northwest corner of the main building (see also section 3.2). It also includes a conceptual description of where the occasional moving truck for residents moving into/out of the apartment and condo buildings will load/unload without unreasonably affecting vehicle and pedestrian circulation.

Response: *Based on the limited size of the retail and restaurant space on the site it is anticipated that deliveries will be very limited and utilize smaller delivery vehicles. In addition, office space related deliveries are not anticipated other than typical parcel deliveries, i.e. UPS, FedEx, Amazon, etc. which typically do not require a separate loading space. Based on this it is the Applicant's opinion that loading spaces are not required for the Project.*

Sincerely,

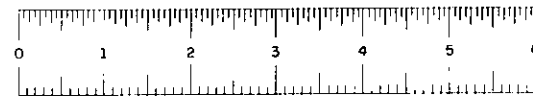
Colliers Engineering & Design CT, P.C.



Philip J. Grealy, Ph.D., P.E.
Geographic Discipline Leader

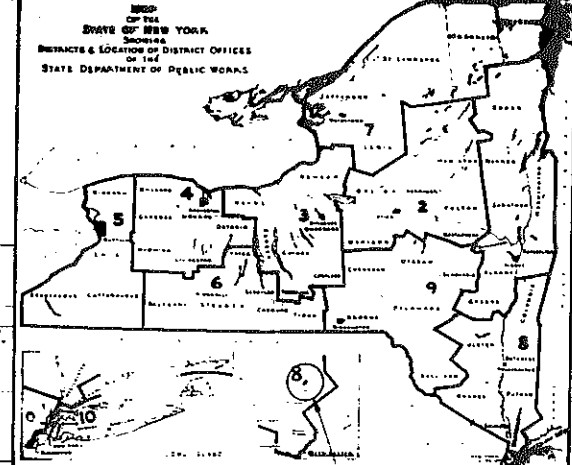
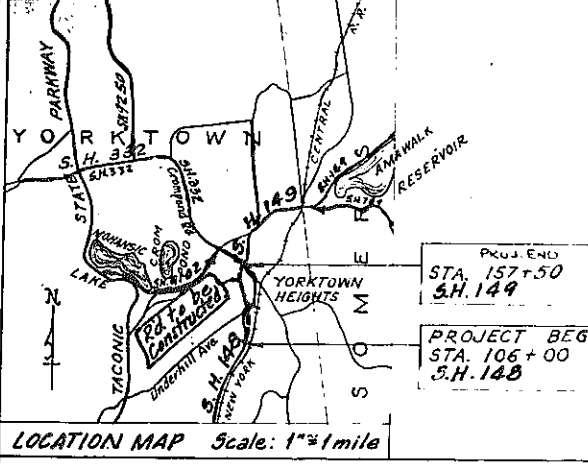



Richard G. D'Andrea, P.E., PTOE
Asst. Department Manager



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F.A.R.C. 58-97




STATE OF NEW YORK
DEPARTMENT OF PUBLIC WORKS
DIVISION OF CONSTRUCTION
 PLANS FOR RECONSTRUCTING WITH FEDERAL AID PORTIONS OF THE
PINES BRIDGE - YORKTOWN HEIGHTS, STATE HIGHWAY NO. 148
 Between Station 106+00 and Station 137+00, a length of 0.59 mile in the Town of Yorktown
 AND
YORKTOWN HEIGHTS - PUTNAM COUNTY LINE, STATE HIGHWAY NO. 149
 Between Station 137+00 and Station 157+50, a length of 0.38 mile in the Town of Yorktown
A TOTAL LENGTH OF 0.97 MILES
 (SEQUENCE NO. 118-1-9)
 F.A. PROJECT NO. DS-150(2) CONTRACT No. F.A.R.C. 58-97
WESTCHESTER COUNTY

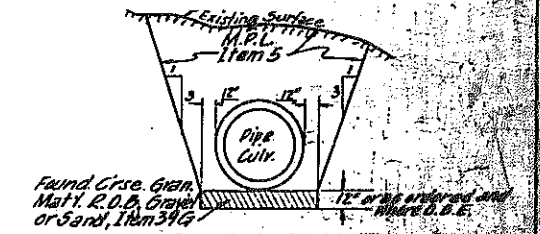
FED. RD. REG. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	N.Y.	DS-150(2)		10	10

PINES BRIDGE - YORKTOWN HEIGHTS - S.H. 148
YORKTOWN HEIGHTS - PUTNAM COUNTY LINE - S.H. 149
TYPE OF CONSTRUCTION
 Cement Concrete Pavement 0.92 Miles
 Miscellaneous Work 0.05 Miles
STANDARD STRUCTURE SHEETS
 46-4, 50-3A, 54-1B, 56-1, 56-6, 56-8, 56-20
 57-7, 57-19, 58-3E, 58-11B, 58-11N, 58-11W
 58-1, 58-17R, 58-48A, 58-48B, 58-48C, 58-48D
 58-45A, 58-45, 58-60, 58-61

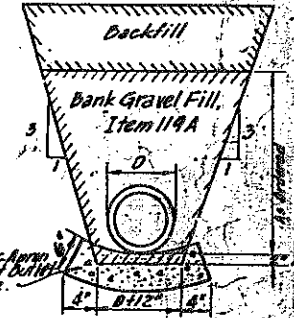
All work contemplated under this contract to be governed by and in conformity with the specifications adopted January 2, 1957, except as modified on Notes placed in the Homized Proposal.

DATE OF CONTRACT Jan 28, 1959	TYPE	MEASURED LENGTH LF	LENGTH IN MILES	THICKNESS OF TOP	WIDTH		50 FT PAVEMENT	CU YDS OF TOP	MATERIALS		
					METAL	ROADWAY			SAND	STONE	CEMENT
DATE OF STARTING Feb 9, 1959	CONCRETE 1-13 3/4 MIX	4951	0.94	8"	2A		118,824	3,30.0	West. M.D.B. NYTRAP	LONG STRE	
DATE OF COMPLETION Feb 9, 1960	ASPHALT CONCRETE	169	0.03	2 1/2"				179 1/2	TEST NO. 59-F-99	TEST NO. 59-F-88	TEST NO. 40-C-226
TOTALS		5116	0.97								

CONTRACTOR
A.E. OTTAVIANO, INC.
 ENGR. IN CHARGE
S.R. MCKEE
 DISTRICT ENGINEER
K. G. ROYER

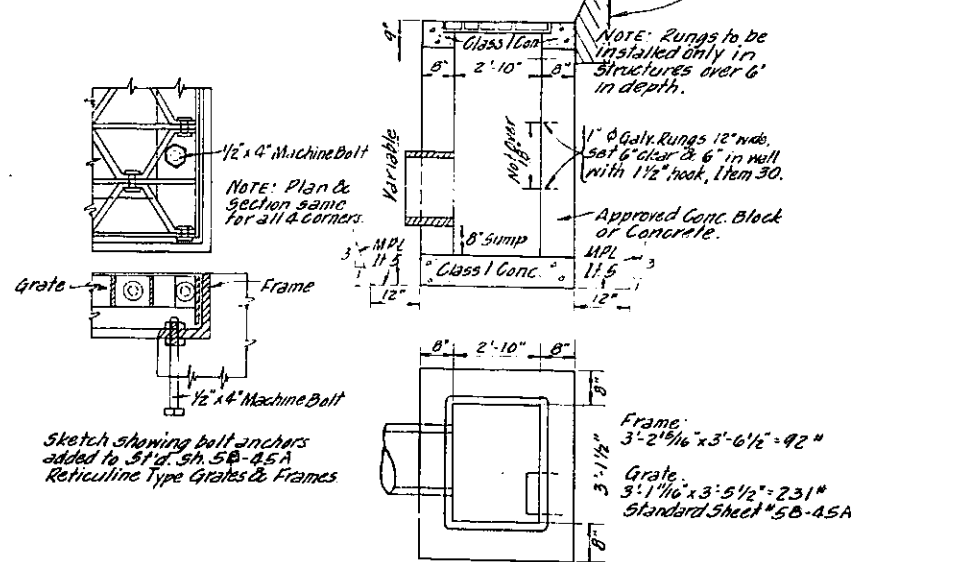


Sketch showing PIPE CULVERT INSTALLATION



Sketch for PIPE UNDERDRAIN ITEM 10R

"CLASS 5 RURAL (MODIFIED)"



DROP INLET, ITEM 102 DI (Not in Pavt.)
 or CATCH BASIN TYPE A ITEM 102A (IN Pavt.)

MADE BY original tracings TRACED BY CHECKED BY
 F.S. PUCCIO M. ALTIERI P. CARR
 Revised tracings Made by Traced by Checked by
 C.J. Baker Carl Pignatelli Owen Cortis
 Revised By C.J. Baker Baker & Thomas

DEPARTMENT OF COMMERCE
 BUREAU OF PUBLIC ROADS
 APPROVED _____ DATE _____
 DIVISION ENGINEER

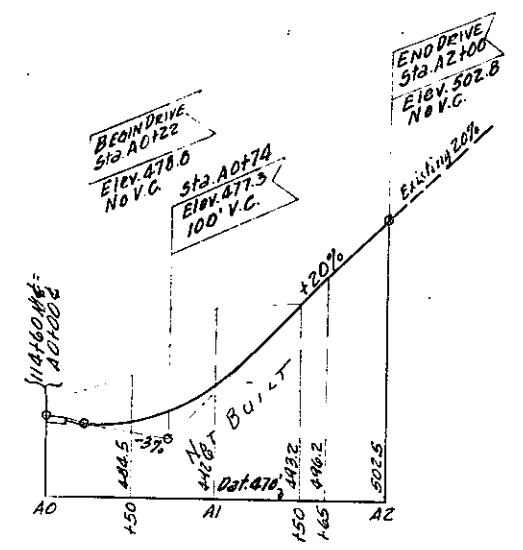
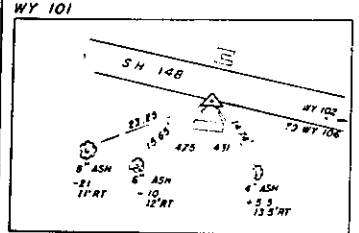
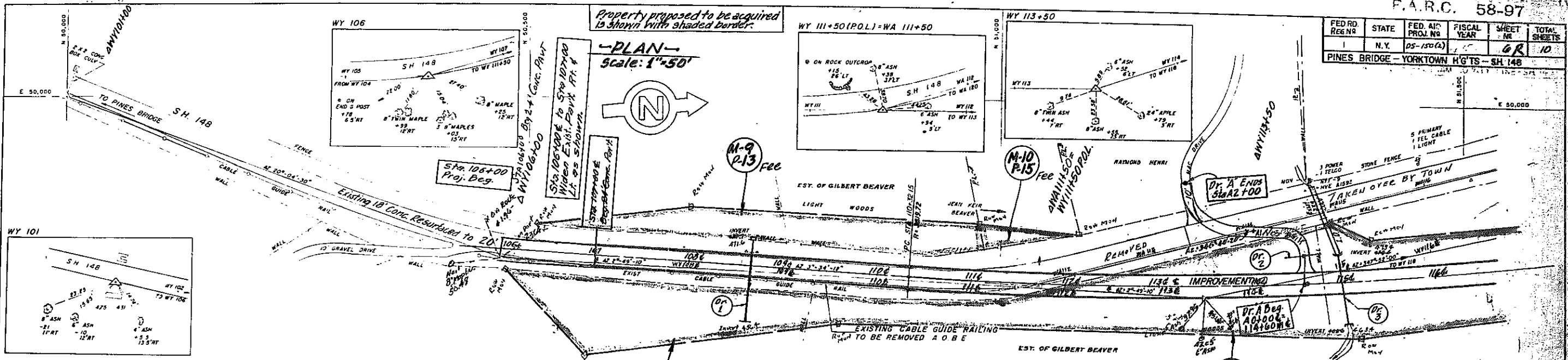
NEW YORK STATE DEPARTMENT OF PUBLIC WORKS
 DIVISION OF CONSTRUCTION
 APPROVED June 30 1959
 Thomas F. Fitzgerald CHIEF ENGINEER
 APPROVED June 14 1959
 B.A. Lefevre DEPUTY CHIEF ENGINEER

PREPARED PURSUANT TO HIGHWAY LAW AND REGULATIONS BY
 [Signature]

F.A.R.C. 58-97

FED. RD. REG. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	N.Y.	DS-150(2)		GR 10	

PINES BRIDGE - YORKTOWN H'GTS - SH 148

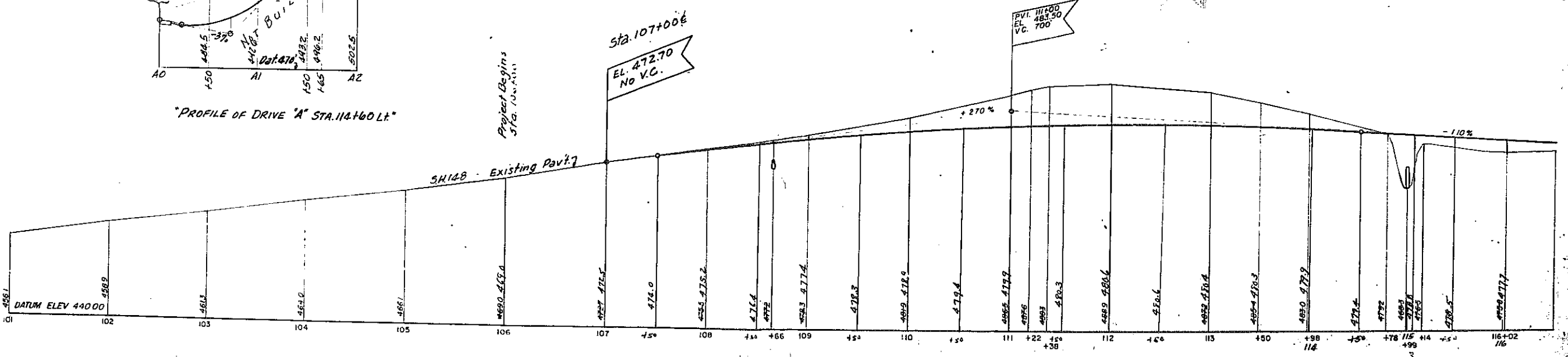
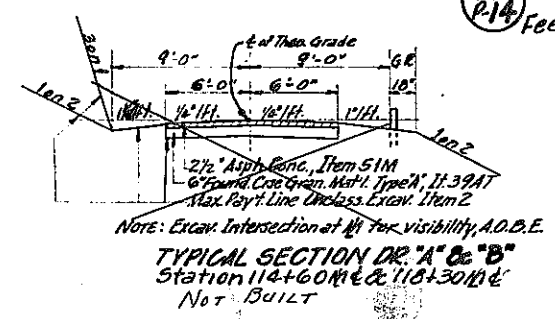


Dr. 1 Sta. 108+60 & Pres. Curb. 2x2 Conc. Lay 88-24" R.C.C.P. D.I. Lt. (Est. 1 Collar)

Sta. 111+30' to Sta. 125+24' Remove Existing Conc. Now. Grade A.O.B.E. & Seed.

Dr. 2 Sta. 114+60 Lt. Lay 48-12" C.I.P. Heavy 14 Gauge Ditch King.

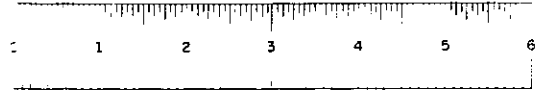
Sta. 114+60 Lt. Grade Drive as shown on Plan, Profile & Typ. Sect.



Plan Revised by C.S. Baker Traced by Carl Rizzuto Checked by Queen & Curtis
Profile C.S. Baker Carl Rizzuto Queen & Curtis

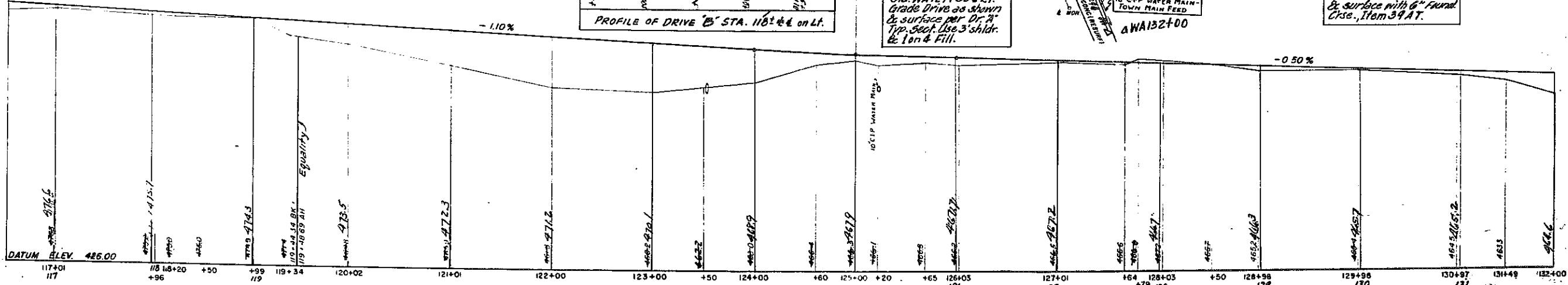
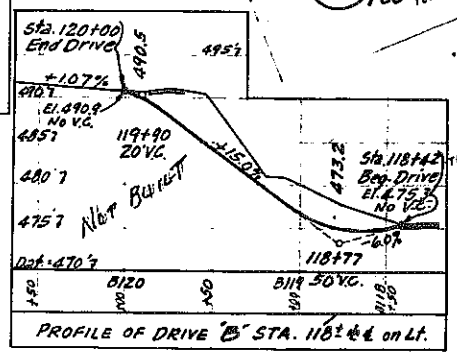
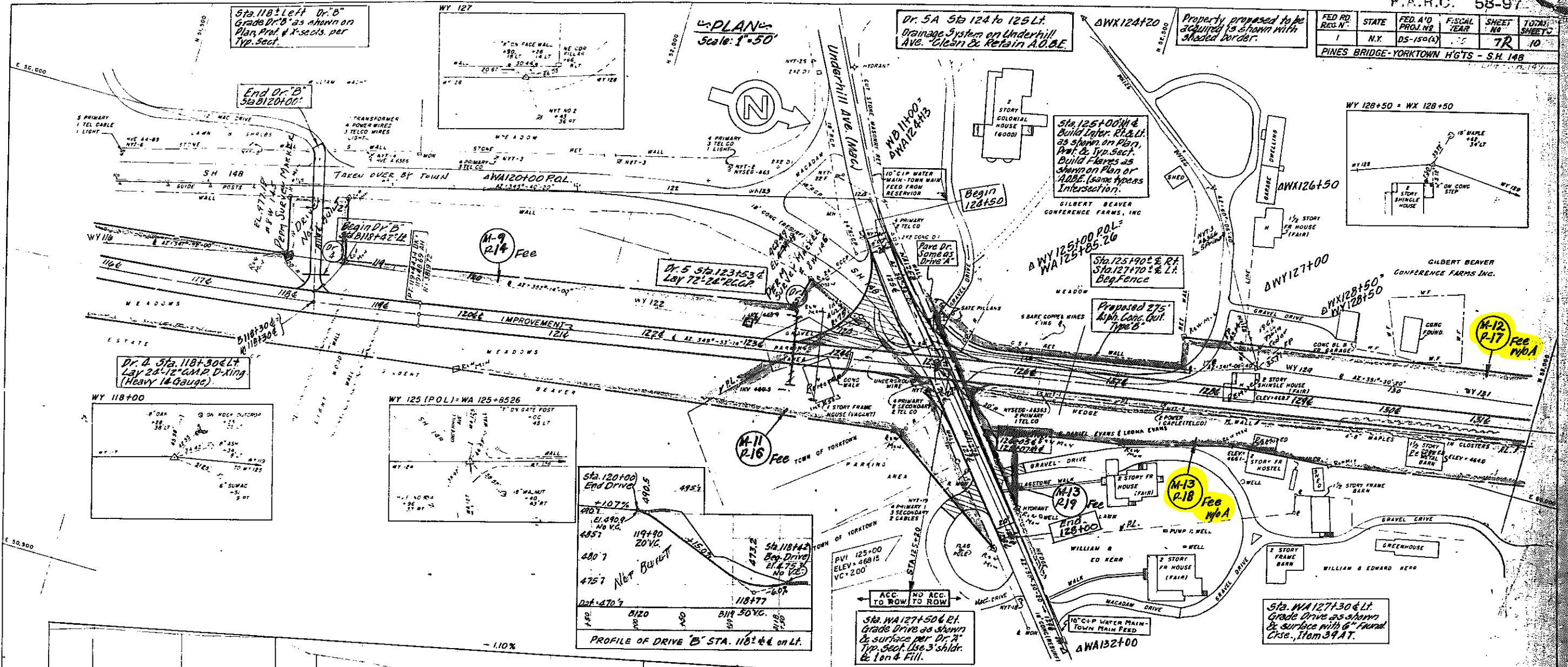
Original Tracings Made by Puccio
Traced by Verlazzo
Checked by Calkins

Prepared pursuant to the Highway Law and Regulations by W.M. [Signature]
Engineer, District No. 2
5/16 1958



FED. RD. REG. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
1	N.Y.	DS-150(A)	55	7R	10

PINES BRIDGE-YORKTOWN HGTS - S.H. 148



PROFILE
HORIZ. 1" = 50'
VERT. 1" = 10'

Revised by C.J. Baker Traced by Carl Puccio Checked by Queen & Curtis
 Profile C.J. Baker Original Tracings Madoby - Puccio
 Traced by Verlezza Checked by Calkins

Prepared pursuant to the Highway Law and regulations by
W.M. Puccio
 Engineer, District No. 2
 5/6 1955