



## INTERIM PAVEMENT TECH NOTES

### Pavement Tapers & Transitions

Sep 2003

#### Editor's Note:

*The following information is being provided to assist engineers in designing pavement tapers and transitions. It represents information collected to date that will be added to and finalized as resources allow. This information in this interim guide is being presented as information only and not as requirements. For information on State standards and requirements for pavement tapers see Highway Design Manual Index 204.4 (see discussion on grade breaks) and the Standard Special Provisions for asphalt concrete and portland cement concrete pavements.*

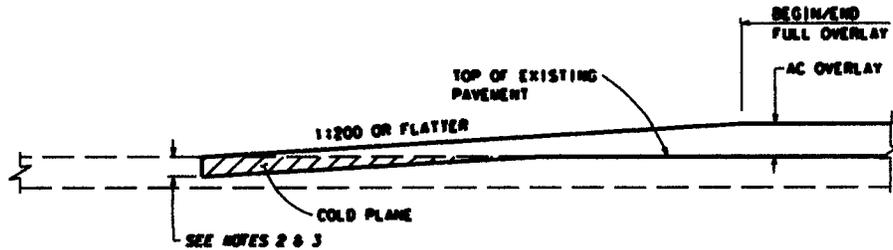
#### **GENERAL:**

Pavement tapers and transitions are a common design detail for overlays and other RRR projects. The goal of tapers is to provide a smooth, ideally unnoticeable transition from one pavement type/overlay to another. The attached figures are modified versions of tapers details developed in the North Region. They provide helpful information on best statewide design practices that can meet geometric, operational, constructibility, pavement, and drainage standards and practices. Although the following 3 Figures are a source of guidance, they should not be considered as comprehensive or the only way of addressing every possible situation that can be found on projects throughout the State. Designers should still exercise good engineering judgment when developing details for specific projects. Designers may find these details useful as construction detail boilerplates to be modified as needed for specific projects. The majority of the discussion is included on these figures rather than in this section, but some helpful hints can be found as follows:

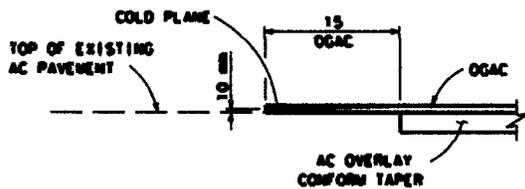
#### **HELPFUL HINTS:**

1. Transition tapers are intended to provide a reasonable cost alternative to engineering a profile for every transition. Even so, in some cases, an engineered profile may be more cost effective than a transition. For example, when replacing pavement underneath an overcrossing/bridge (see Figure 3), an engineered profile can be less expensive, shorter, and easier to construct than a pavement transition, especially for very flat tapers (1:400 or greater). It is recommended that when designing tapers underneath overcrossings, that the designer compares the cost and constructibility of very flat tapers vs. engineered profiles.
2. When cold planing (AC) or grinding (PCC) pavement to construct a taper for a bridge approach or to provide adequate vertical clearance under an overcrossing, it is important to remember that the remaining existing pavement needs to be thick enough to meet the desired pavement service life. If not, the pavement will fail prematurely requiring expensive repairs and additional traffic delays. This is particularly true if traffic is going to be placed on the planed or ground pavement before the final overlay is placed. To minimize impact to planed/ground pavement, consideration should be given to limit the amount of time the Contractor has between when the pavement is planed/ground to when it is overlaid.

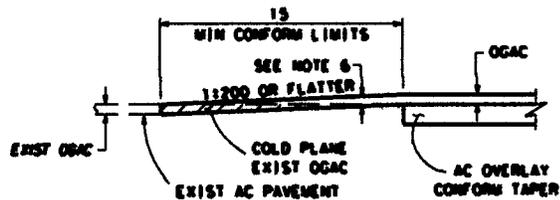
Consideration should also be given to replace PCC pavement in lieu of grinding it to a thickness less than 200 mm. Existing PCC pavement should not be ground to where the resultant thickness is less than 150 mm because the PCC pavement could lose integrity and break-up. AC placed over PCC should be a least 100 mm thick to avoid raveling and premature failure.



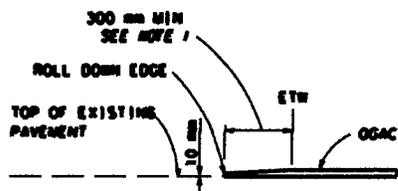
**TRANSVERSE AC TAPER TO EXIST AC PAVEMENT**



**TRANSVERSE OGAC TAPER**  
SEE NOTE 5



**TRANSVERSE OGAC TAPER TO EXIST OGAC**



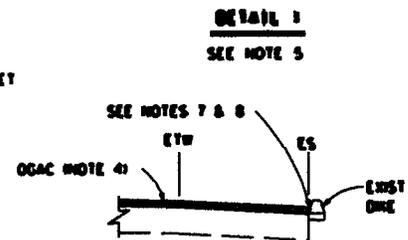
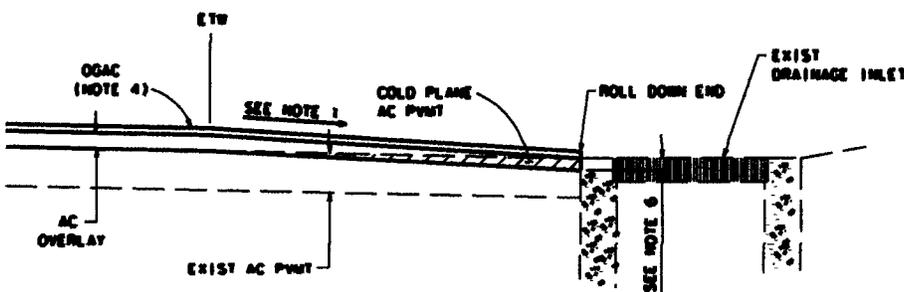
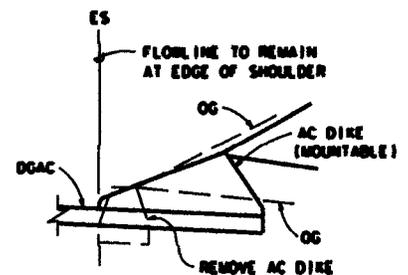
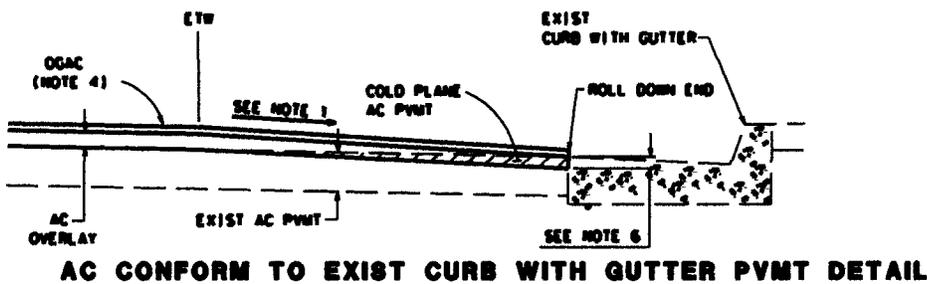
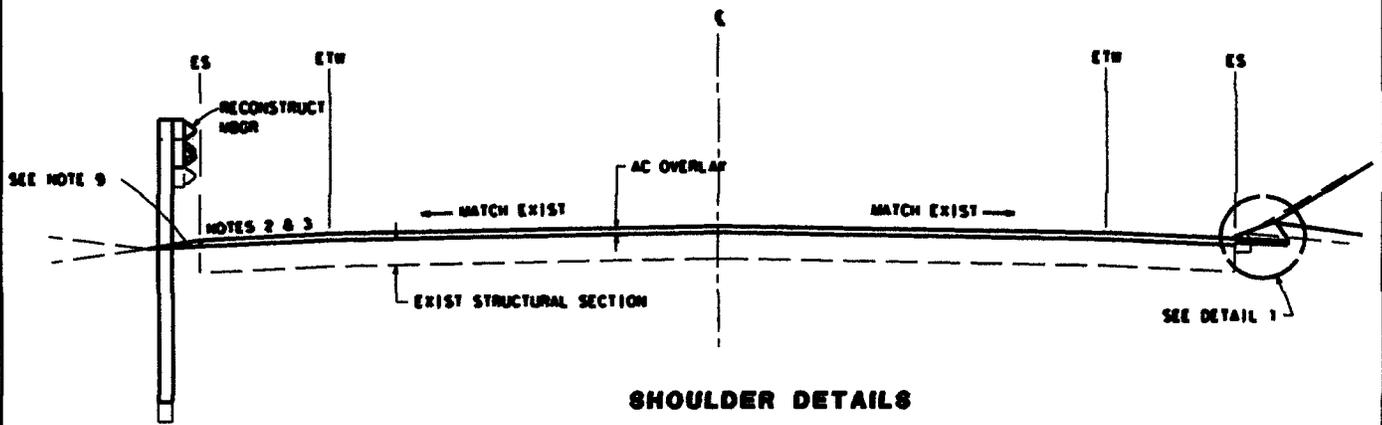
**LONGITUDINAL EDGE TAPER FOR OGAC**  
SEE NOTE 4

**NOTES TO DESIGNER:**

1. WIDTH SELECTED SHOULD BE BASED ON MULTIPLE FACTORS, INCLUDING OVERALL WIDTH OF SHLD & PRESENCE OF BICYCLES. OGAC SHOULD BE PAVED TO EDGE OF SHOULDER ON RAMPS, HIGH SIDE OF SUPER ELEVATIONS, & NARROW SHOULDERS (< 2.4 m). FOR ADDITIONAL INFORMATION SEE DISTRICT BICYCLE COORDINATOR, DISTRICT MAINTENANCE, & HD DESIGN REVIEWER
2. MINIMUM THICKNESS SHOULD MATCH THE THICKNESS OF THE TOP LIFT. (TWICE THE THICKNESS OF THE AGGREGATE, WHICH IS USUALLY 45 mm FOR 19 mm AGGREGATE, MINIMUM.)
3. CONSULT MATERIALS DEPARTMENT FOR MINIMUM THICKNESS.
4. DO NOT USE OGAC TO BRING THE SHOULDERS UP TO GRADE WHEN TRAVELED WAY IS OGAC.
5. USE THIS DETAIL WHEN A COMBINATION OF PROFILE GRADE, CROSS SLOPE, AND/OR ABUTMENT SKEW RESULTS IN WATER BEING TRAPPED IN THE OGAC WITHIN THE TRAVELED WAY (UNABLE TO MIGRATE TO THE SHOULDERS).
6. SAME THICKNESS AS OGAC OVERLAY.

**FIGURE 1**  
**LONGITUDINAL & TRANSVERSE JOINT TAPERS**

NO SCALE - ALL DIMENSIONS IN METERS UNLESS OTHERWISE SHOWN



### AC CONFORM TO EXIST DRAINAGE INLET DETAIL

#### NOTES TO DESIGNER:

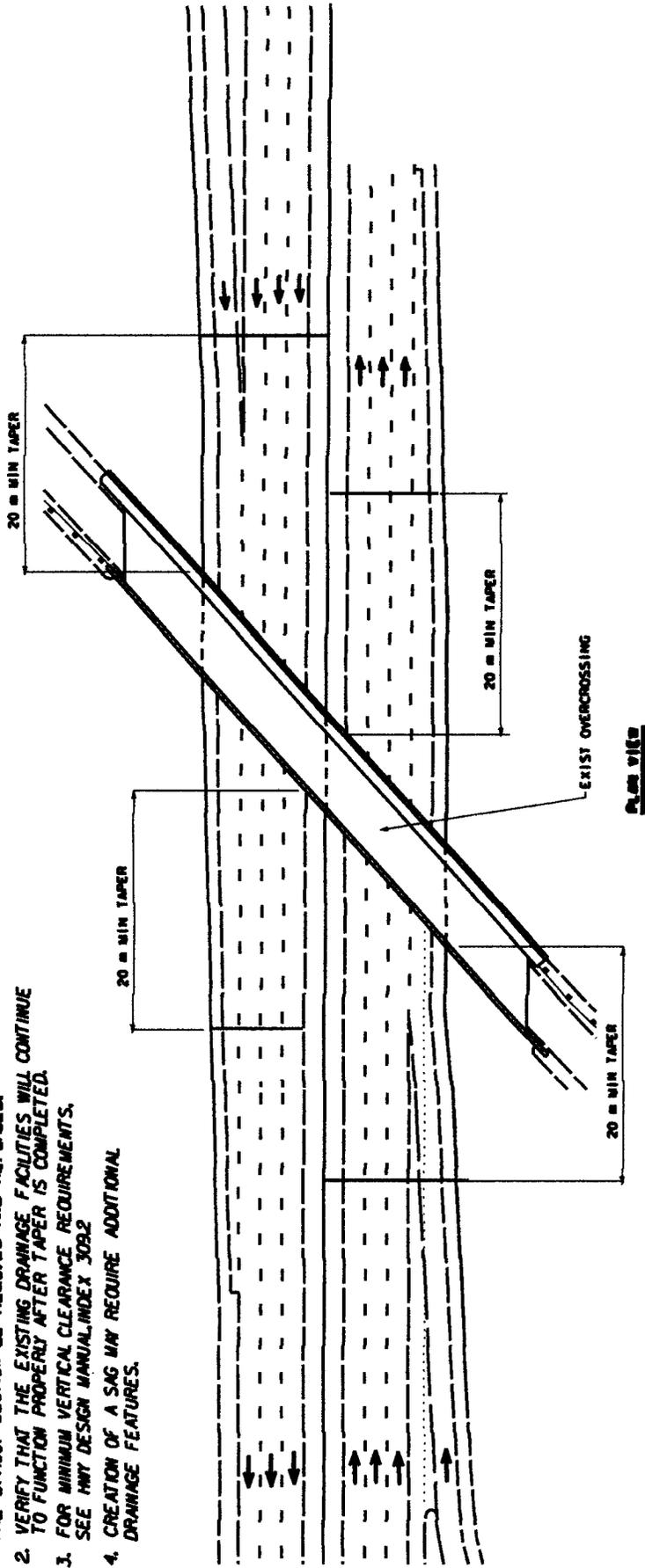
1. SEE HDM TOPIC 302 FOR MAX ALLOWABLE CROSS-SLOPES.
2. ADDITIONAL DESIGN AND SAFETY CRITERIA MAY APPLY FOR MBGR. FOR FURTHER INFO SEE TRAFFIC MANUAL OR DISTRICT TRAFFIC.
3. WHEN GRINDING OR PAVING NEXT TO MBGR OR OBSTACLE, RECONSTRUCTING MBGR WILL BE NECESSARY TO ACCOMMODATE GRINDING MACHINES AND COMPACTION EQUIPMENT.
4. OGAC APPLIES ONLY WHEN CHOSEN AS A SURFACE COURSE. OMIT DETAILS FOR THIS COURSE WHEN OGAC IS NOT PRESENT.
5. FOR STANDARDS AND ADDITIONAL INFORMATION ON DIKES, SEE HDM TOPIC 303.
6. TWICE THE THICKNESS OF THE AGGREGATE (WHICH IS A MINIMUM OF 45 mm FOR 19 mm AGGREGATE, MINIMUM).
7. VERIFY WITH HYDRAULICS TO SEE IF DIKE NEEDS TO BE RAISED TO MAINTAIN CAPACITY OF GUTTER.
8. VERIFY WITH DISTRICT HYDRAULICS IF ADDITIONAL DRAINAGE IS REQUIRED AT THE CONFORM ON THE SHOULDER OR AT BRIDGE APPROACH SLABS IN ORDER TO AVOID PONDING.
9. CONTACT DISTRICT LANDSCAPE AND MAINTENANCE REGARDING THE APPROPRIATE TREATMENT FOR WEED ABATEMENT.

**FIGURE 2  
LONGITUNDINAL TAPERS AT CURBS, DIKES,  
INLETS, AND MBGR**

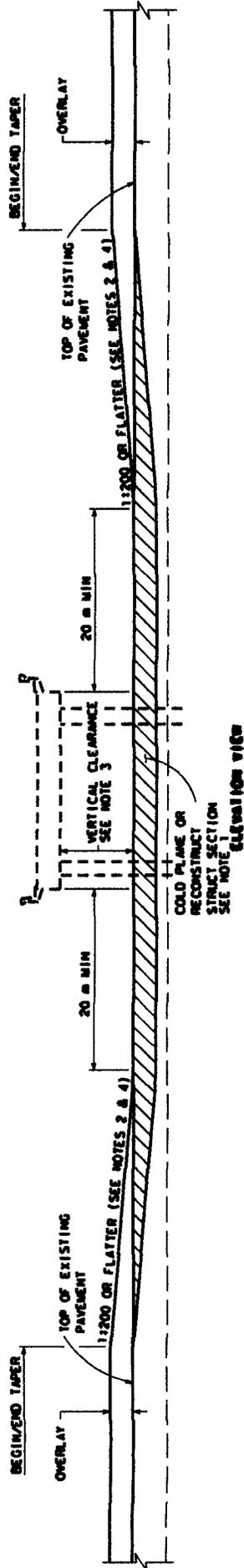
NOT TO SCALE - ALL DIMENSIONS IN METERS UNLESS OTHERWISE SHOWN

**NOTES TO DESIGNER:**

1. STRUCTURAL SECTION THICKNESS NEEDS TO PROVIDE THE PROPOSED PAVEMENT SERVICE LIFE. THIS MAY REQUIRE THAT THE STRUCT SECTION BE REMOVED AND REPLACED.
2. VERIFY THAT THE EXISTING DRAINAGE FACILITIES WILL CONTINUE TO FUNCTION PROPERLY AFTER TAPER IS COMPLETED.
3. FOR MINIMUM VERTICAL CLEARANCE REQUIREMENTS, SEE HWY DESIGN MANUAL INDEX 309.2
4. CREATION OF A SAG MAY REQUIRE ADDITIONAL DRAINAGE FEATURES.



**PLAN VIEW**



**FIGURE 3  
OVERCROSSING PAVEMENT OVERLAY TAPER**

NO SCALE - ALL DIMENSIONS IN METERS UNLESS OTHERWISE SHOWN