

**Annex-1**



**Memorandum**

**Technical Advisory Group on Development of Housing Start-up Index**

In view of the need for development of a Housing Start-up Index to monitor the movements of the Indian economy on a regular basis based on appropriate methodology and the international best practices, it has been decided to set up a Technical Advisory Group on " Development of Housing Start-up Index ".

2. The Terms of Reference of the Technical Advisory Group are as given below:

- (i) To review base paper on concepts, methodology, approach to generate the data base for construction of the indices and suggest a feasible methodological framework for construction of HSUI for the Indian economy, with a view to assist monetary policy formulation, and to guide and oversee its implementation.
- (ii) To recommend modalities of entrusting the work for construction of HSUI by appropriate external agency or institution, including scope of work and deliverables.
- (iii) To evaluate the work of the external agency/institution and recommend its acceptance by the Bank.
- (iv) Any other issue as deemed necessary for development of the HSUI.

3. The constitution of the Technical Advisory Group would be as follows:

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|----|---|-------------------|
| 1. | Prof. Amitabh Kundu<br>Dean, School of Social Sciences<br>Jawaharlal Nehru University<br>New Delhi. | Chairman          |
| 2. | Dr. R. B. Barman<br>Executive Director<br>Reserve Bank of India,<br>Mumbai                          | Vice-<br>Chairman |
| 3. | Dr. Amal Kanti Ray<br>Officer-in-Charge<br>DESACS<br>Reserve Bank of India<br>Mumbai                | Member            |

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|-----|---|--------|
| 4.  | Dr. M. D. Patra<br>Adviser-In-Charge<br>Monetary Policy Department<br>Reserve Bank of India<br>Mumbai   | Member |
| 5.  | Shri. S. Sridhar<br>Chairman & MD<br>National Housing Bank<br>New Delhi   | Member |
| 6.  | Dr. S. K. Nath<br>Director General<br>Central Statistical Organization (CSO)<br>Ministry of Statistics and P.I<br>Government of India<br>New Delhi                          | Member |
| 7.  | Shri. D. S. Negi<br>Director (NBO)<br>Ministry of Housing & Urban Poverty Alleviation<br>Government of India<br>New Delhi   | Member |
| 8.  | Shri. T. Parbakaran<br>Director Finance (holding additional charge of CMD)<br>Housing and Urban Development Corporation<br>(HUDCO)<br>New Delhi                             | Member |
| 9.  | Shri. P. K. Ray<br>Director General and CEO (In-Charge)<br>National Sample Survey Organisation (NSSO)<br>Ministry of Statistics and P.I<br>Government of India<br>New Delhi | Member |
| 10. | Shri. D. R. Bhosale<br>Director<br>Directorate of Economics & Statistics<br>Govt. of Maharashtra<br>Mumbai  | Member |
| 11. | Smt. M. Sheela Priya, IAS<br>Sp. Commissioner and Director<br>Dept. of Economics & Statistics<br>Govt. of Tamil Nadu<br>Chennai   | Member |
| 12. | Shri. K. K. Mondal<br>Director<br>Bureau of Applied Economics & Statistics<br>Govt. of West Bengal<br>Kolkata   | Member |
| 13. | Dr. B. K. Sharma<br>Director and Chief Registrar (Births and Deaths)<br>Directorate of Economics & Statistics<br>Govt. of National Capital Territory of Delhi<br>New Delhi  | Member |

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|-----|---|---------------------|
| 14. | Shri. Sangeet Shukla<br>Chief General Manager (Personal Banking)<br>State Bank of India<br>Mumbai                                     | Member              |
| 15. | Dr. D. B. Gupta<br>National Council of Applied Economic Research<br>(NCAER)<br>New Delhi  | Member              |
| 16. | Prof. Bharat Ramaswami<br>Professor, Planning Unit<br>Indian Statistical Institute<br>New Delhi                                       | Member              |
| 17. | Prof. Abhay Pethe<br>Professor of Urban Economics and Regional<br>Development<br>Department of Economics, Mumbai University<br>Mumbai | Member              |
| 18. | Shri. Radhey Shyam<br>Adviser<br>DESACS<br>Reserve Bank of India<br>Mumbai  | Member<br>Secretary |

4. The Technical Advisory Group may, if necessary, invite other persons for specific deliberations. The Bank will reimburse expenses on travel, transport and incidentals for non-official members for attending the meetings of the TAG.

5. The Technical Advisory Group may submit its first report within one month and the final report within three months from the first meeting of the Group.

6. The Department of Statistical Analysis and Computer Services (Statistical analysis Division) will provide the secretarial support to the Technical Advisory Group.



(Rakesh Mohan)  
Deputy Governor  
30-7-2007

## Annex-2

### **Building Permit Survey in Canada**

#### **Target population**

The Building Permits Survey targets all Canadian municipalities that issue permits. At present more than 2,350 Canadian municipalities, representing all provinces and territories and encompassing 95% of the Canadian population, are covered by the survey. In practice, all urban agglomerations are represented in the survey, as well as a high percentage of rural municipalities. All of these municipalities are surveyed. The municipalities comprising the remaining 5% are not included in the survey, and the figures are not adjusted to represent them. They make up very small portions of the population, and their construction activities have little impact on the total. Non-responding municipalities that issue permits are urged on a regular basis to respond to the survey.

#### **Instrument design**

The Building Permits Survey questionnaire was designed to capture the basic information included in permits issued by municipalities: permit number, type of project, type of work, value of the work, total building area and the addresses of the builder, the owner and the construction site. The questionnaire has not changed in recent years, since reports received from municipalities suggest that the kind of information included in permits is the same as the kind of information requested in the questionnaire.

#### **Sampling**

This survey is a census with a cross-sectional design.

#### **Data sources**

Responding to this survey is mandatory. Data are collected directly from survey respondents. The survey is usually conducted by mail, but to reduce their overhead, a number of municipalities are choosing to file computerized reports electronically. A few municipalities are opting to respond by telephone. The municipal officer responsible for issuing permits is asked to complete a form each month describing all major construction projects. A set of six questionnaires and envelopes is sent out at the respondent's request. Respondents are asked to return the report no later than 10 days after the end of the month. Beginning on the 11th day, non-reporting municipalities are contacted by telephone. The calls continue until the end of the collection period. Non-reporting municipalities are called at least three times. In the last week of each month, municipalities that have failed to file their reports for a number of months in the year are re-contacted in an effort to obtain the missing reports.

**Error detection**

Most reporting and data entry errors are corrected through computerized input and complex data review procedures. Strict quality control procedures are applied to ensure that collection; coding and data processing are as accurate as possible. Checks are also performed on totals and the magnitude of data. Reports that fail to meet the quality standards are subject to verification and are corrected as required. The fact that building permit data are extracted from municipal administrative documents and that a growing number of municipalities are producing computerized reports substantially lowers the risk of reporting errors.

**Imputation**

Data are imputed for municipalities that fail to send in their reports for the current period. The data are calculated automatically, subject to certain constraints, by applying the month-to-month and year-to-year variations in similar values of responding municipalities and the historical pattern of the missing municipalities to the previously used values. At the end of the year, the imputed values are replaced with actual data received from late-reporting municipalities and final estimates are produced. If the actual data are not received, current values that have been imputed are assigned a value of 0 to replace the imputed data.

When partial survey data are received (for example, the value of a project is missing), the missing characteristics are imputed on the basis of the average values for similar projects in the municipality's area.

No adjustment is made for permit under-valuation or for failure to apply for a permit for construction work.

**Quality evaluation**

The initial purpose of the Building Permits Survey is to collect information about construction intentions. The data and trends from the survey are periodically compared with Canada Mortgage and Housing Corporation data on housing starts and Public and Private Investment Survey data for the non-residential sector. In addition, a number of municipalities publish their own figures for the value of building permits issued. Those figures are matched against the results of the Building Permits Survey. The comparisons are used to assess the quality and consistency of the data series.

**Disclosure control**

Statistics Canada is prohibited by law from releasing any data which would divulge information obtained under the Statistics Act that relates to any identifiable person, business or organization without the prior knowledge or the consent in writing of that person, business or organization. Various confidentiality rules are applied to all data that are released or published to prevent the publication or disclosure of any information deemed confidential. If necessary, data are suppressed to prevent direct or residual disclosure of identifiable data.

**Revisions and seasonal adjustments**

Seasonal adjustment is performed by the X11-ARIMA method, version 2000. Seasonally adjusted data for the total number of housing units and the aggregate value of building permits are obtained indirectly, i.e., by adding up their seasonally adjusted components. The total number of dwelling units is obtained by summing the seasonally adjusted data for single-family and multiple units. The total value of building permits is obtained by summing the following elements: residential, industrial, commercial and institutional. Some series contain no apparent seasonality. In these cases, unadjusted values have been tabulated and aggregated to the adjusted values of the other series. At the end of the year, the seasonally adjusted time series are revised to take into account the most recent seasonal fluctuations. Usually, only the last three years are subjected to this revision process

### **Annex-3**

## **Housing Starts –United States**

### **I. PURPOSE**

The purpose of the New Residential Construction press release is to provide statistics on the construction of new privately-owned residential structures in the United States. Data included in the press release are (1) the number of new housing units authorized by building permits; (2) the number of housing units authorized to be built, but not yet started; (3) the number of housing units started; (4) the number of housing units under construction; and (5) the number of housing units completed. The data relate to new housing units intended for occupancy and maintained by the occupants. They exclude hotels, motels, and group residential structures such as nursing houses and college dormitories. Also excluded are "HUD-code" manufactured (mobile) house units.

### **II. DEFINITIONS**

#### **New Residential Construction**

The category of statistics called "New Residential Construction" consists of data on the five phases of a residential construction project. This is 1) housing units authorized to be built by a building or zoning permit; 2) housing units authorized to be built, but not yet started; 3) housing units started; 4) housing units under construction; and 5) housing units completed.

New residential construction statistics exclude group quarters (such as dormitories and rooming houses), transient accommodations (such as transient hotels, motels, and tourist courts), "HUD-code" manufactured (mobile) houses, moved or relocated buildings, and housing units created in an existing residential or nonresidential structure. However, in a new building combining residential and nonresidential floor areas, every effort is made to include the residential units in these statistics, even though the primary function of the entire building is for nonresidential purposes. These statistics only include privately-owned buildings. Publicly owned housing units are excluded from the statistics. Units in structures built by private developers with partial public subsidies or which are for sale upon completion to local public housing authorities under the HUD "Turnkey" program are all classified as private housing.

#### **Housing Unit**

A housing unit, as is a house, an apartment, a group of rooms or a single room intended for occupancy as separate living quarters. Separate living quarters are those in which the occupants live separately from any other individuals in the

building and which have a direct access from the outside of the building or through a common hall. In accordance with this definition, each apartment unit in an apartment building is counted as one housing unit.

### **"HUD-code" Manufactured (mobile) Houses**

A manufactured house is defined as a movable dwelling, 8 feet or more wide and 40 feet or more long, designed to be towed on its own chassis, with transportation gear integral to the unit when it leaves the factory, and without need of a permanent foundation. These houses are built in accordance with the U.S. Department of Housing and Urban Development (HUD) building code. Since these units are typically not covered by the building permits issued in local municipalities, they are excluded from the New Residential Construction statistics.

### **Building Permits**

Statistics on housing units authorized by building permits include housing units issued in local permit-issuing jurisdictions by a building or zoning permit. Not all areas of the country require a building or zoning permit. The statistics only represent those areas that do require a permit. Current surveys indicate that construction is undertaken for all but a very small percentage of housing units authorized by building permits. A major portion typically gets under way during the month of permit issuance and most of the remainder begins within the three following months. Because of this lag, the housing unit authorization statistics do not represent the number of units actually put into construction for the period shown, and should therefore not be directly interpreted as "housing starts."

### **Housing Units Authorized, but Not Started**

Estimates of housing units authorized by a building or zoning permit, but not yet started, are shown in the "authorized, not started" data series. These only represent the areas of the country that require a building or zoning permit.

### **Housing Starts**

The start of construction is when excavation begins for the footings or foundation of a building. All housing units in a multifamily building are defined as being started when excavation for the building has begun. Beginning with statistics for September 1992, estimates of housing starts include units in residential structures being totally rebuilt on an existing foundation. Housing starts are estimated for all areas of the United States, regardless of whether permits are required.

## **Housing Units Under Construction**

Estimates of housing units started, but not yet completed, are shown in the "under construction" data series. Housing units under construction are estimated for all areas of the United States, regardless of whether permits are required.

## **Housing Completions**

One-unit structures are defined as completed when all finished flooring has been installed. If the building is occupied before all construction is finished, it is classified as completed at the time of occupancy. In buildings with two or more housing units, all the units in the building are counted as completed when 50 percent or more of the units are occupied or available for occupancy. Housing completions are estimated for all areas of the United States, regardless of whether permits are required.

## **Residential Building**

A residential building is a building consisting primarily of housing units. In a new building combining residential and nonresidential floor areas, every effort is made to include the residential units in these statistics, even though the primary function of the entire building is for nonresidential purposes.

### **III. SOURCE OF DATA**

#### **III.a. Housing Units Authorized by Building Permits**

- Statistics are based upon reports submitted by local building permit officials in response to a mail survey. Approximately 9,000 of the 20,000 permit issuing places in the United States are surveyed monthly and remaining are surveyed annually.
- The data are obtained using Form C-404, "Report of New Privately-Owned Residential Building or Zoning Permits Issued."
- When a report is not received, missing data are either obtained from the Survey of Use of Permits (SUP) which is used to collect information on housing starts, or imputed.
- Data for SUP are available only for about 900 places for which Census Bureau field representatives list permits.
- Imputations are based on the assumption that the ratio of current month authorizations to those of a year ago should be the same for reporting and non-reporting places.

### **III.b. Housing Units Authorized, but Not Started; Housing Starts; Housing Units Under Construction; and Housing Completions**

- Estimates of Housing Units Authorized, but Not Started; Housing Starts; Housing Units Under Construction; and Housing Completions are all obtained from the Survey of Construction (SOC).
- SOC is comprised of two parts: (1) Survey of Use of Permits (SUP) which estimates the amount of new construction in areas that require a building permit and (2) Non-permit Survey (NP) which estimates the amount of new construction in areas that do not require a building permit. Less than 3 percent of all new construction takes place in non-permit areas.
- Data from both parts of Survey of Construction are collected by Census field representatives. For SUP they visit a sample of permit offices and select a sample of permits issued for new housing.
- These permits are then followed through to see when they are started and completed. Each project is also surveyed to collect information on characteristics of the structure. For NP, roads in sampled non-permit land areas are driven at least once every three months to see if there is any new construction. Once new residential construction is found, it is followed up the same as in SUP.
- The Census field representatives use interviewing software on laptop computers to collect the data.
- Facsimiles of the computer-based questionnaires are provided to respondents to familiarize them with the survey. These facsimiles show the questions that are asked for housing units in single-family buildings - Form SOC-QI/SF.1, and in multiunit buildings Form SOC-QI/MF.1.

## **IV. GEOGRAPHIC COVERAGE**

Most statistics in the New Residential Construction release are tabulated only for the United States and four Census Regions. The Survey of Construction does not have a large enough sample size to make state or local area estimates. The only series that is available at a smaller geographic area is the housing units authorized by building permits. Building permit data are collected from individual permit offices, most of which are municipalities; the remainder are counties, townships, or New England and Middle Atlantic-type towns. Since building permits are public records, local area data are available without any confidentiality problems. From local area data, estimates are tabulated for Counties, States, and Metropolitan Areas.

## **V. SAMPLE DESIGN**

The monthly statistics shown for the United States, regions and states are derived from a sample of 9,000 permit-issuing places selected from a universe of 20,000 such places. Selection of the sample was a multiple step process. All permit-issuing places in the 75 Metropolitan Areas (MAs) having the greatest number of housing units

authorized in 2002 were selected with certainty. All permit-issuing places in states with a limited number of permit-issuing places were selected with certainty. Permit-issuing places having special data reporting arrangements were selected with certainty. The remaining places were stratified by state. Within a state, places were ordered by a weighted average of the numbers of housing units authorized in 2000, 2001, and 2002. Places with a large weighted average, varying by state, were selected with certainty. Other places were selected at the rate of 1 in 10.

## **VI. COMPILATION OF DATA**

### **VI.a. Housing Units Authorized by Building Permits**

Survey forms received are edited for such items as units per building, cost per unit, cost per building, numbers too high or low, etc. Estimates are imputed for missing monthly reporters. Monthly building permits data are available in four basic formats: State, Metropolitan Area (MA), County, and Place. Data are tabbed for the current month and for year-to-date. Year-to-date data include any late reports or corrections from prior months. Monthly data are not revised except for the highest aggregates (US and region) after annual processing. State data includes division, region and US data. These are sample based estimates that represent the entire geographic area. MA tables show all MAs, but most do not include complete counts on a monthly basis. The MAs which are completely covered monthly include the 75 MAs having the greatest number of housing units authorized in 2002. The remaining is just the sum of monthly reporters with no estimate for annual reporters. Annual tables include estimates for all permit areas. Monthly county data are the sum of the places requested to report monthly in a county, and for counties not fully covered by monthly reporters, county totals will be incomplete. Annual county totals include estimates for all permit offices. Monthly place level data include municipalities requested to report monthly. Data for all permit-issuing municipalities are available annually.

There is a follow-up for non-reporters in which calls are made to delinquent offices to obtain data or correct address information. At the end of the year a second form is mailed to delinquent offices. If an office is 1-4 months delinquent, a form is sent for each missing month, and if 5 or more months delinquent, an annual form is sent.

Annual data are obtained by summing monthly data for monthly reporters and using annual data for annual reporters. If both monthly and annual data exist, the annual data are used. If no annual data are received, but there were some months reported, the sum of the monthly reported and imputed data is used rather than the imputed annual data. Building permits data are not sample based on an annual basis, annual data are tabulated from the entire universe of building permit offices.

### **Methodology**

#### **Housing Starts:**

The compilation of the housing starts series is a multistage process.

First, an estimate is made monthly of the number of housing units for which building permits have been issued in all permit-issuing places.

Second, for each permit selected in the permit-issuing places, an inquiry is made of the owner or the builder to determine in which month and year the unit(s) covered by the permit was (were) started. In case the units authorized by permits in a particular month are not started by the end of that month, follow-ups are made in successive months to find out when the units were actually started.

Ratios are calculated (by type of structure) of the number of units authorized by permits, based on the Building Permits Survey to the number of units authorized by permits based on estimates generated from the Survey of Construction.

Separate ratios are calculated for that month and the prior 11 months. The 13th through 18th month back are summed and a ratio is calculated and all months from 19 months back through 60 months (5 years) are summed to get another ratio. These ratios are then applied to the appropriate estimate of the number of units started, based on the 900 SOC permit offices, in the corresponding months or groups of months to provide ratio adjusted estimates of the number of units started for each month or group of months.

Adjustments are made to account for those units started prior to permit authorization and for late reports. These adjustments are based on historical patterns of pre-permit starts and late data. No adjustment is made for units in permit areas built without a permit.

Third, units identified as started in the monthly canvass of non-permit areas are weighted appropriately to provide an estimate of total housing starts in areas not covered by building permit systems.

Adding this estimate of starts in non-permit areas to the estimate of starts in permit-issuing places results in an estimate of total private housing units started.

This same methodology is also used for the estimates of housing units authorized but not started, under construction, and completed.

The procedure described above is computed by size of structure. A total of 8 different sets of authorization ratios that change from month-to-month are utilized to calculate the number of housing units started by type of structure in permit places. The rates are calculated for one-unit structures for each of the four regions and for all 2 or more unit structures for each of the four regions. Starts by type of structure in non-permit areas are calculated directly in the estimating procedure described above.

#### ***Adjustments for Non-Reporting of Characteristics***

Information on selected characteristics, such as purpose of construction or design type, are not reported by every case in our sample. Cases for which characteristics are not reported have been distributed proportionally to those for which the characteristic was reported.

## **VII. RELIABILITY OF DATA**

### **VII.a. Housing Units Authorized by Building Permits**

The portion of residential construction measurable from building permits records is inherently limited since such records obviously do not reflect construction activity outside of areas subject to local permits requirements. For the nation as a whole, less than 2 percent of all privately owned housing units are constructed in areas not requiring building permits. However, this proportion varies greatly from State to State and among Metropolitan Areas.

The reported statistics are influenced by the following factors:

1. Some new residential construction work in building permit jurisdictions escapes recording. However, it is assumed that the number of such unrecorded units is very small.
2. Detailed recent evidence is lacking as to how closely the valuation recorded for building permit purposes approximates the dollar amount of construction work involved.
3. Changes in boundaries of localities due to annexations, new incorporations, etc., result in some problems of comparability over time, even for statistics for the same places.
4. Some building permit jurisdictions close their books a few days before the end of the month, so that the time reference for permits is not in all cases strictly the calendar month.

To the extent that most of these limiting factors apply rather consistently over an extended period, they may not seriously impair the usefulness of building permit statistics as prompt indicators of trends in residential construction activity. However, the geographic limitations of the data need to be kept in mind. In addition, the dollar volume of residential construction should be used with caution. Due to the nature of the building permit application, it was felt that the valuations may frequently differ from the true cost of construction. Any attempt to use these figures for inter-area comparisons of construction volume must, at best, be made cautiously and with broad reservations.

#### **VII.a.1. Sampling and Non-sampling Errors**

The estimates for the United States, Regions, Divisions, and States are based on samples and may differ from statistics, which would have been obtained from a complete census using the same schedule and procedures. An estimate based on a sample survey is subject to both sampling error and non-sampling error. The accuracy of a survey result is determined by the joint effect of these errors. Sampling error reflects the fact that only a particular sample was surveyed rather than the entire population. Estimates of the size of the sampling errors are provided by the standard error of the estimates. Non-sampling errors can be attributed to many sources, including: inability to obtain information about all cases in the sample, definitional difficulties, differences in interpretation of questions, inability or unwillingness of respondents to provide correct information, and errors made in

processing data. As derived for these statistics, the estimated relative standard errors include part of the effect of non-sampling errors but do not measure any systematic biases in the data.

The particular sample selected for the Building Permits Survey is one of a large number of similar probability samples that, by chance, might have been selected using the same sample design. Each of the possible samples would probably yield somewhat different results. The standard error of a survey estimate is a measure of the variation of all possible survey estimates around the theoretical, complete coverage value. The relative standard error is defined as the standard error divided by the value being estimated.

Statistics on Counties and Metropolitan Areas are not based on samples. Although not subject to sampling variability, they are subject to various non-sampling errors. Explicit measures of their effects generally are not available, but it is believed that most of the significant response and operational errors were detected and corrected in the course of the Bureau's review of the data for reasonableness and consistency.

### **VII.b. Housing Units Authorized, but Not Started; Housing Starts; Housing Units Under Construction; and Housing Completions**

These estimates are based on sample surveys and may differ from statistics which would have been obtained from a complete census using the same schedules and procedures. An estimate based on a sample survey is subject to both sampling error and non-sampling error. The accuracy of a survey result is determined by the joint effects of these errors.

#### **VII.b.1. Sampling Errors**

Sampling error reflects the fact that only a particular sample was surveyed rather than the entire population. Each sample selected for the Survey of Construction is one of a large number of similar probability samples that, by chance, might have been selected under the same specifications. Estimates derived from the different samples would probably differ from each other. The standard error, or sampling error, of a survey estimate is a measure of the variation among the estimates from all possible samples and, thus, is a measure of the precision with which an estimate from a particular sample approximates the average from all possible samples.

Estimates of the standard errors have been computed from the sample data for selected statistics. They are presented in the tables in the form of average relative standard errors. The relative standard error equals the standard error divided by the estimated value to which it refers.

The sample estimate and an estimate of its standard error allow us to construct interval estimates with prescribed confidence that the interval includes the average result of all possible samples with the same size and design. For example, suppose the Housing Starts table showed that an estimated 110,000 units in one-unit structures were started in a particular month. Further, suppose that the average relative standard error of this estimate is 3 percent. Multiplying 110,000 by 0.03, we obtain 3,300 as the standard error. This means that we are confident, with 2 chances

out of 3 of being correct, that the average estimate from all possible samples of one-unit structures started during the particular month is between 106,700 and 113,300 units. To increase the probability to about 9 chances out of 10 that the interval contains the average value over all possible samples (this is called a 90-percent confidence interval), multiply 3,300 by 1.6, yielding limits of 104,720 and 115,280 (110,000 units plus or minus 5,280 units). The average estimate of one-unit structures started during the specified month may or may not be contained in any one of these computed intervals; but for a particular sample, one can say that the average estimate from all possible samples is included in the constructed interval with a specified confidence of 90 percent.

Ranges of 90-percent confidence intervals for estimated percent changes are shown in the text. When the range of the confidence interval contains zero, it is unclear whether there was an increase or decrease; that is, the change is not statistically significant.

### **VII.b.2. Non-sampling Errors**

As calculated for these estimates, the relative standard error estimates sampling variation but does not measure all non-sampling error in the data. Non-sampling error consists of both a variance component and a bias component. Bias is the difference, averaged over all possible samples of the same size and design, between the estimate and the true value being estimated. Non-sampling errors are usually attributed to many possible sources: (1) coverage error - failure to accurately represent all population units in the sample, (2) inability to obtain information about all sample cases, (3) response errors, possibly due to definitional difficulties or misreporting, (4) mistakes in recording or coding the data obtained, and (5) other errors of coverage, collection and non-response, response, processing, or imputing for missing or inconsistent data. These non-sampling errors also occur in complete censuses. Although no direct measures of these errors have been obtained, precautionary steps have been taken in all phases of the collection, processing, and tabulation of the data to minimize their influence.

Another source is the adjustment for units started prior to permit authorization and for late reports. The final estimates of privately owned housing units started are adjusted less than 2 percent for pre-permit starts and late reports.

## **VIII. SEASONAL ADJUSTMENT**

Seasonal adjustment is the process of estimating and removing seasonal effects from a time series to better reveal certain non-seasonal features such as underlying trends and business cycles. Seasonal adjustment procedures estimate effects that occur in the same calendar month with similar magnitude and direction from year-to-year. In series whose seasonal effects come primarily from weather the seasonal factors are estimates of average weather effects for each month. Seasonal adjustment does not account for abnormal weather conditions or for year-to-year changes in weather. Seasonal factors are estimates based on present and past experience.

## ANNEX-4

### **4.1 National Buildings Organization**

National Buildings Organization collects data on current housing and building construction activities in public and private sectors, prices of building materials, wage rates of labour, building permits and completion certificates issued and Building Construction Cost Index for LIG houses constructed by PWD. This information is being collected from 63 major cities and pertains to only authorized construction activities. There exist serious data gaps relating to current statistics on building activity, consumption of buildings materials, employment of building labour, building costs and methods of financing of housing, schedules are revised as recommended by a High Level Group. They had come out with new Plan Scheme namely "Urban Statistics for HR and Assessments (USHA)" and "Building Related Information And Knowledge Systems (BRIKS)". USHA aims at the development and maintenance of national a database, MIS and knowledge repository relating to urban poverty, slums, housing, construction and other urbanization-related statistics. Whereas BRIKS is a software launched by NBO for online transmission of data relating to housing and building construction activities in the country. The important points of the note submitted by NBO is as follows:

- NBO is currently engaged in collection, collation, analysis and dissemination of housing and construction statistics only in urban areas in the country.
- As part of its activities, NBO on an annual basis with the help of the State Directorate of Economics and Statistics (DES) collects data on:
  - i) Current Housing and Building Construction Activities, both in Public and Private Sector;
  - ii) Prices of Building Materials and Wage Rates of Labour;
  - iii) Building Permits and Completion Certificates Issued;
  - iv) Building Construction Cost Index for LIG houses constructed by PWD.
- The information is collected relating to no. of projects executed/under execution; no. of dwelling units completed; plinth area added; floor area added; investment made during the year; type of buildings completed/under execution by executing agency etc.
- The information from public sector is collected from all Central Public Sector Undertakings (CPSUs), Central Construction Agencies i.e. CPWD, MES, Railways, P & T, State Construction Agencies and State Public Sector Undertakings (SPSUs) with respect to all the projects being executed or completed and costing Rs. 25 lakhs or more (earlier it was Rs. 50,000 or more).
- The data in respect of the private sector are collected on complete enumeration basis from Class I and Class II towns while a sample of 10% are selected from Class III to Class VI towns, separately for each category of towns in each State, which is collected through Local Urban Bodies (earlier data was collected from the towns having population of 10,000 or more).

- The data on Building Permits and Completion Certificates issued are also collected from Municipalities/Development Authorities of the Towns having a population of 100,000 and above on calendar year basis. Till now the data was being collected from 281 Municipalities on the basis of 1991 census. Now from 2006 onwards the data is being collected from 445 Municipalities as per 2001 census.
- Difficulties faced by NBO includes
  1. The data is having a time lag of 3-4 years.
  2. Filing of the above information is not mandatory under any law and therefore information is not available from major part of the country.
  3. No information is collected in respect of the unapproved/unauthorized constructions
- NBO is in the process of developing customized software for online data transmission using a web-based software.

Even though NBO has a system of data collection for the building statistics its periodicity and time lag are critical issues to be solved. As put forward by NBO the installation of BRIKS will help to overcome these issues to a certain extent. The building permits data available with NBO can be used for estimating the housing starts data using the start rates obtained through a sample survey.

#### **4.2 Directorate of Economic and Statistics, Government of Tamil Nadu**

##### **Data available with DES-TN**

- Houses are categorized by their plinth area such as Low Income Group (LIG), Middle Income Group (MIG) and High Income Group (HIG).
- Data source: The state departments of Economics and statistics are the field agencies to collect the data. Construction statistics is two fold: Public Sector and Private sector. Construction in Public sector includes all projects of Public undertakings at a cost of 25 lakhs and above. These data are collected annually from the divisional offices of the public organizations. Private sector constructions include all permissions issued by the local bodies. These permissions may be for residential or non-residential. Till the year 2006-07, the data relating to private sector was being collected quarterly. Only from the current year 2007-08, it is changed annually. This existing data collection method may be fine tuned for the purpose of collecting data on Housing start-up also.
- National Building organization has prescribed a format for collection of data on construction of new houses.
- Number of Building permits issued by the local bodies are collected **annually** by all the State Departments of Economics & Statistics under the guidelines issued by the National Building organization. All the Class I and II towns and 10% of Class III to VI towns selected at random are covered under this system. Average numbers of permits issued from the sample class III to VI towns can be adapted to all Class III and class VI towns of the state. By this, number of permits issued in the state in a year can be worked out.

To conclude with, up to the year 2006-07 ,data on construction permits issued by local bodies were being collected by DES from all the 6 Municipal Corporations, 102 Municipalities , 50 Third Grade Municipalities and 325 Town Panchayats having population 10,000 and above as per 1991 population census. There are 26 Class I , 56 Class II, 163 Class III , 340 Class IV , 214 Class V and 13 Class VI towns in Tamil Nadu.

As per the revised guidelines of NBO, from 2007-08, all Class I and Class II towns in the state and 10 % sample of Class III to Class VI towns are covered under this data collection process. And data collected is on new constructions only. A total of **57361 building permits were issued during the year 2005-06** out of which **23,727 are from Corporations and Municipalities 33,634 are from town panchayats.** Details on issuance of building permits are available with DES, Tamil Nadu.

**Computerisation of Urban Local Bodies in Tamil Nadu:** All the 6 Municipal Corporations, 102 Municipalities and 50 third grade municipalities are in the process of implementing e-governance in their public services delivery system. Other municipalities and major town panchayats are also computerizing their functions but computerized data on issuance of building licenses and starting of houses construction may not be available with them.

#### 4.3 Directorate of Economic and Statistics, Government of Delhi

- According to 2001 Census, there were 25.54 lakh households in Delhi compared to 18.62 lakh households in 1991.
- There were 33.80 lakh census houses in 2001 of which 30.02 lakh houses were occupied and 3.78 lakh were vacant. Out of the occupied houses only 23.16 lakh (78.18%) were being used exclusively for residential purposes.
- Piped water supply was available to 19.24 lakh households in 2001 as against 14.09 lakh house-holds in 1991.
- Electricity was available to 23.72 lakh (92.86%) households in 2001 and the balance 7.14% households were dependents on Kerosene, Solar Energy etc.
- Toilet facility was available to 11.61 lakh households. 12.55 lakh households were connected with closed drainage and 10.41 lakhs households with open drainage.
- Separate kitchen facility was available to 16.87 lakh households and 17.37 lakh households were using LPG for cooking purposes in 2001.

#### Type of Settlements

- Due to the lack of adequate developed land at affordable prices to different categories of residents on the one hand and continuous flow of migrants on the other, various types of unplanned settlements have come up in Delhi. Delhi landscape is marked with following types of settlements with distinctive features of each type in terms of level of civic amenities and the status of houses and land.
- Projected population in 2021 in different type of settlements may be seen in the following Table

| S.NO | Type of Settlement                | Population    | % of total estimated population |
|------|-----------------------------------|---------------|---------------------------------|
| 1.   | JJ Clusters                       | 20.72         | 14.8                            |
| 2.   | Slum Designated Areas             | 26.64         | 19.1                            |
| 3.   | Unauthorised Colonies             | 7.40          | 5.3                             |
| 4.   | JJ Resettlement Colonies          | 17.76         | 12.7                            |
| 5.   | Rural Villages                    | 7.40          | 5.3                             |
| 6.   | Regularised-Unauthorised Colonies | 17.76         | 12.7                            |
| 7.   | Urban Villages                    | 8.88          | 6.4                             |
| 8.   | Planned Colonies                  | 33.08         | 23.7                            |
|      | <b>Total</b>                      | <b>139.64</b> | <b>100.00</b>                   |

### Housing Need

Based on the projected population of 230 lakhs by 2021, the estimated additional housing stock required will be around 24 lakhs dwelling units. In view of the social economic position of the population of Delhi, it is estimated that around 55% of the housing requirement would be for the urban poor and the economically weaker sections in the form of 2 rooms or less. There is a need for the development of housing to the extent of at least 75,000 dwelling units per annum in different categories. The land required to be developed as a new housing will be to the tune of around 450-500 hectre per annum.

### NSS 58<sup>th</sup> Round

As per results of NSS 58<sup>th</sup> round (July-December 2002) about 97% of dwelling units in Delhi are pucca structure and 3% are semi pucca/kuchha structure. About 91% of the buildings are being used for residential purposes. About 63% of the dwelling units are owned by households, 24% are hired accommodation, 7% are Employers quarters. About 62% are independent houses, 18% are flats, 20% are of other categories. About 31% of the houses are having less than 20sq m plinth area and 27% houses are having 20-50 sq. m plinth area. About 67% of the houses were of 5-20 years old.

### Electricity Connections.

The month wise electricity connection given to domestic, commercial and industrial consumers during 2006-07 and 2007-08 (April to Aug.2007) are given below:-

| DETAILS OF NEW CONNECTIONS IN DELHI 2006-07 |               |              |             |               |
|---|---------------|--------------|-------------|---------------|
| MONTHS                                      | DOMESTIC      | COMMERCIAL   | INDUSTRIAL  | Total         |
| 1   | 2             | 3            | 4           | 5             |
| Apr. 06                                     | 12622         | 2317         | 74          | 15013         |
| May. 06                                     | 14272         | 2981         | 137         | 17390         |
| June.06                                     | 14939         | 3116         | 190         | 18245         |
| July.07                                     | 14709         | 3221         | 125         | 18055         |
| Aug.06                                      | 14925         | 3006         | 96          | 18027         |
| Sept.06                                     | 14688         | 3132         | 109         | 17929         |
| Oct.06                                      | 14236         | 2703         | 169         | 17108         |
| Nov.06                                      | 18092         | 2859         | 243         | 21194         |
| Dec.06                                      | 18115         | 3083         | 179         | 21377         |
| Jan.07                                      | 18319         | 2856         | 196         | 21371         |
| Feb.07                                      | 15669         | 3099         | 250         | 19018         |
| Mar.07                                      | 17706         | 3641         | 233         | 21580         |
| <b>Total</b>                                | <b>188292</b> | <b>36014</b> | <b>2001</b> | <b>226307</b> |

| DETAILS OF NEW CONNECTIONS<br>(Apr. 2007 to Aug. 2007) |              |              |            |               |
|--|--------------|--------------|------------|---------------|
| MONTHS   | DOMESTIC     | COMMERCIAL   | INDUSTRIAL | Total         |
| 1  | 2            | 3            | 4          | 5             |
| Apr. 07  | 13671        | 3036         | 238        | 16945         |
| May. 07  | 18554        | 3681         | 235        | 22470         |
| June.07  | 15491        | 3143         | 44         | 18678         |
| July.07  | 20452        | 3885         | 295        | 24632         |
| Aug.07   | 16809        | 3369         | 117        | 20295         |
| <b>Total</b>   | <b>84977</b> | <b>17114</b> | <b>929</b> | <b>103020</b> |

- It has been observed that during 2006-07 about 2.26 lakh new connections were given in Delhi. Out of this 1.88 lakhs (84% of the total) were domestic connections.
- The domestic connections varies from 12,000 in April 2006 to the maximum of 18319 in Jan 2007. It is not known whether all the new domestic connection given only for newly constructed houses or some more new connections were given in the existing houses.

Building Plans : In NCT of Delhi there are three local bodies MCD, NDMC and Delhi Cantt. Board. The area and population of these local bodies are as under:-

(As per Census 2001)

| Local Body         | Area (In sq. Km) | Population (In lakhs) |
|--------------------|------------------|-----------------------|
| NDMC               | 42.74            | 3.02                  |
| Delhi Cantt. Board | 42.97            | 1.25                  |
| MCD                | 1397.29          | 134.23                |
| <b>Total</b>       | <b>1483.00</b>   | <b>138.51</b>         |

- Under Type of Settlements in Delhi, only 24% of the total population is residing under planned colonies and remaining 76% is under unplanned colonies and urban/rural villages etc.
- The Building Plans are sanctioned only for planned areas in Delhi mostly by the MCD.
- The MCD have 12 zones however (In 3 zones namely City, Sadar and Karol Bagh no new building permits were applied)

The Status of number of building plans applied by the residents, sanctioned and number of completion certificate applied/ issued by MCD during 2006-07 are as under:-

| <b>Name of Zone</b> | <b>Building Plan applied</b> | <b>Building Plans sanctioned</b> | <b>Completion Certificates applied</b> | <b>Completion Certificate issued</b> |
|---------------------|------------------------------|----------------------------------|--|--------------------------------------|
| Central             | 444                          | 328                              | 30                                     | 22                                   |
| South               | 344                          | 222                              | 88                                     | 40                                   |
| Civil Line          | 284                          | 105                              | 04                                     | -                                    |
| Najafgarh           | 98                           | 61                               | 16                                     | 11                                   |
| Narela              | Nil                          | Nil                              | 03                                     | Nil                                  |
| South               | 336                          | 292                              | 25                                     | 3                                    |
| North               | 103                          | 58                               | 07                                     | Nil                                  |
| Rohini              | 588                          | 402                              | 16                                     | 01                                   |
| West                | 692                          | 376                              | 26                                     | 8                                    |
| <b>Total</b>        | <b>2889</b>                  | <b>1844</b>                      | <b>215</b>                             | <b>85</b>                            |

**ANNEX- 5**

**Schedule A**

1. Administrative zone /ward of the building
2. Building Permit issue No.
3. Date of the Application for the permission (new house or additional unit)
4. Date of issue of the Permit
5. Name and address of the applicant/key applicant (house owner or builder)
6. Location of Building (Address)
7. Whether Building contains Single or Multiple Housing Units
8. If Multiple Housing Unit, No. of housing units in the building
9. No. of Storey in the Building (Not including the basement)
10. Use to which the building is to be put
11. Residential/commercial/industrial/other/mixed
12. Total Plinth Area of the building (Sq. ft)
13. Total built up area
14. Breakup of the built up area by use in case of mixed land use
15. In case of extension or rebuilding of a unit, what is the additional area (new build up area less the area to be forgone or already demolished in the old structure)
16. Height of the building (Ft.)

**Schedule B**

1. What are the other agencies giving building permission in the same city/urban agglomeration (specify their jurisdictions)
2. What are the documents to be attached for submitting the application. Give details like land ownership paper, site plans, affidavit, including certificates from certified professionals (not to include here permissions to be obtained from any other agency in the city or state)
3. What are the permissions or certificates to be obtained from any other agency before submitting the application or to be attached to that.
4. Are the permissions given in committee meeting held at certain intervals or on day to day basis
5. Is there any other formality to be completed before starting construction once permission is given
6. Is there a maximum stipulated time within which permission (or rejection) has to be accorded.
7. What is the average number of days for giving permission for those who got the permission (give approximate figure based on information since January 2008)

8. How many applications are rejected or referred back for clarification or other formalities (give approximate figure based on information since January 2008)
9. For what period the permission is valid
10. What percentage of permissions fail to get materialized within the stipulated period (give approximate figure)
11. What is the procedure for renewal or fresh application
12. Can construction begin prior to formal permission or in anticipation of the permission (mention reasons, circumstances and requirements for that)
13. Does the permission giving agency give permission subsequently in cases
  - (a) where the construction has started under certain provisions (like a certificate of an architect)
  - (b) totally illegal construction
14. What are the other milestones in different stages of building construction when permission giving agency interacts (with the owner or builder) as official requirement such as
  - (a) At the stage of house start
  - (b) Putting ceiling
  - (c) Getting power connection
  - (d) Getting water connection
  - (e) Completion of construction
15. What percentage of permissions get through the different stages (give approximate figure)
16. What are the implications for non compliance of milestone linked procedures (mentioned in 13) for the builder
17. What are the information sent to Department of Economics and Statistics at the state level
18. How do you think the linkage with DES can be improved

## ANNEX-6

### Definitions

- *Residential Building*: A building, which is primarily intended or used for dwelling/housing purposes. Other buildings are non-residential.
- *Housing (Dwelling) unit or House*: The accommodation availed by a household for its residential purpose. It may be an entire structure or a part thereof or consisting of more than one structure. There may be cases of more than one household occupying a single structure such as those living in independent flats, in which case, there will be as many housing units as the number of households in the structure. There may also be cases of one household occupying more than one structure (e.g. detached structure for sitting, sleeping, cooking, bathing etc.) for its housing accommodation. In this case, all the structure together constitute a single housing unit.
- *New Construction*: New construction means the creation of an entirely new structure, whether or not the site on which it is built was previously occupied.
- Reported permits on residential buildings **only include** newly owned residential buildings, which includes all residential buildings owned or partially owned by a private or public company or an individual during the period of construction.
- Reported permits **not include** commercial buildings, institutional buildings, industrial buildings and other buildings which include all buildings other than residential, industrial, commercial and institutional buildings e.g. cattle sheds, passenger shelters etc.
- Reported permits **not include** demolitions, renovations and extensions not leading to new housing unit/units.
- *Plinth Area*: It means “ground area covered by the building above the plinth level. In case the building has more than one floor, it means the sum total of plinth areas of all the floors.
- *Number of Storey*: Number of Storey in building with ground floor only should be taken as one and it should be taken as ‘two’ if it has ground floor and first floor. It should be given in a similar manner for taller buildings. Barsati etc. on top floor construction may not be counted towards number of storey if covered area in is less than 25 percent of covered area on ground floor.

- *Housing Start:* Work is begun when the first physical operation, such as, site-operation, delivery of materials and equipment to the site, start of excavation or laying foundation etc. is done after planning and designing stages. All housing units in a multiple housing unit building are defined as being started when excavation for the building has begun. For eg: if a particular building permit contains 50 housing units and the excavation begins for the footing or foundation of that building then it will be considered as 50 housing starts
- *Building Completed (Work completed):* A building on which work is completed and which is physically ready for occupation.

**ANNEX-7**

**Survey Schedule**

**Schedule -Part I**

**SURVEY ON BUILDING PERMITS**

(To be collected from the permit issuing offices)

**[1] Identification Block:**

- i) State/UT: \_\_\_\_\_ code:
- ii) District: \_\_\_\_\_ code:
- iii) Name of town/village: \_\_\_\_\_ code:
- iv) Civic status of the town: \_\_\_\_\_ code:
- v) Class of the town by population size \_\_\_\_\_ code:
- v) Name of the permission issuing authority \_\_\_\_\_  
(full address) \_\_\_\_\_  
\_\_\_\_\_
- vi) Name of the contact person \_\_\_\_\_ Designation \_\_\_\_\_ Telephone  
No: \_\_\_\_\_ email \_\_\_\_\_

**[2] List of units for sample selection**

Period in which permits were issued \_\_\_\_\_ Quarter; [2003 or 2004] Year (Calendar Year) *(Please strike out which ever is not applicable)*

**B)**

| Sr. No: | Administrative zone /ward of the building. | Building Permit issue No. | Permit issue date (dd/mm/yy yy) | Name of the owner /builder | Location of Building (Address) | Pin code | Whether Building contains Single =1 or Multiple = 2 Housing Units | <i>If Cl. (8) is 2 then</i> No. of housing units in the building | No: of Storey in the Building (Not including the basement but ground floor) | Total Plinth Area of the building (Sq.ft) |
|---------|--|---------------------------|---------------------------------|----------------------------|--------------------------------|----------|---|--|---|---|
| (1)     | (2)  | (3)                       | (4)                             | (5)                        | (6)                            | (7)      | (8)   | (9)  | (10)  | (11)                                      |
|         |  |                           |                                 |                            |                                |          |   |  |   |   |

**Schedule -Part II**

**SURVEY ON HOUSING STARTS**

(Through on-site visits of the selected sample permits)

**[1] Identification of sampled building permit**

- i) State/UT: \_\_\_\_\_ code:
- ii) District: \_\_\_\_\_ code:
- iii) Name of town/village: \_\_\_\_\_ code:
- iv) Period in which permits were issued .....Quarter 2003 / 2004 Year (Calendar Year)
- v) Serial Number of the building permit selected for data collection \_\_\_\_\_  
(From Schedule Part 1- [2] B Cl.1)
- vi) Administrative zone/ward of the building \_\_\_\_\_
- vii) Building Permit issue No \_\_\_\_\_
- viii) Permit issue date (dd/mm/yyyy) \_\_\_\_\_
- ix) Whether Building contains Single =1 or Multiple = 2 housing units \_\_\_\_\_  
ix.1) If ix) is 2 then Number of housing units \_\_\_\_\_

**[2] Information of the Owner/Builder**

- i) Name of the owner \_\_\_\_\_
- ii) Location of the building (Address) \_\_\_\_\_  
Pin code \_\_\_\_\_

**[3] Particulars of field operation**

| srl. no. | Item                     | Investigator         |                      |                      | Assistant superintendent |                      |                      | Superintendent       |                      |                      |
|----------|--------------------------|----------------------|----------------------|----------------------|--------------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
| (1)      | (2)                      | (3)                  |                      |                      | (4)                      |                      |                      | (5)                  |                      |                      |
| i)       | (a) Name (block letters) |                      |                      |                      |                          |                      |                      |                      |                      |                      |
|          | (b) Code                 | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/>     | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| ii)      | <b>Date(s) of:</b>       | DD                   | MM                   | YY                   | DD                       | MM                   | YY                   | DD                   | MM                   | YY                   |
|          | (a) Survey/inspection    | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/>     | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|          | (b) Receipt              | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/>     | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|          | (c) Scrutiny             | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/>     | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
|          | (d) Dispatch             | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/>     | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> | <input type="text"/> |
| iii)     | Signature                |                      |                      |                      |                          |                      |                      |                      |                      |                      |

**[4] Information on Housing starts**

|     |   |                      |
|-----|---|----------------------|
| i)  | Has excavation started for footing or foundation of the building (Yes =1, No = 0) | <input type="text"/> |
| ii) | <b>If yes</b>   | <input type="text"/> |
|     | (a) When was the building construction started (mm/yyyy)                          |                      |

|  |     |  |  |
|--|-----|--|--|
|  | (b) | Number of housing units in the building  |  |
|  | (c) | Number of storey in the buildings ( <i>Not including the basement but ground floor</i> ) |  |
|  | (d) | Total plinth area of the buildings (in sq.ft.)   |  |
|  | (e) | Date of completion (if not completed expected date) (mm/yyyy)                            |  |

**[5] Remarks by investigator**

**[6] Comments by supervisory officer(s)**

### **General Instructions**

1. **Residential Building:** A building, which is primarily intended or used for dwelling/housing purposes. Other buildings are non-residential.
2. **Housing (Dwelling) unit:** The accommodation availed by a household for its residential purpose. It may be an entire structure or a part thereof or consisting of more than one structure. There may be cases of more than one household occupying a single structure such as those living in independent flats, in which case, there will be as many housing units as the number of households in the structure. There may also be cases of one household occupying more than one structure (e.g. detached structure for sitting, sleeping, cooking, bathing etc.) for its housing accommodation. In this case, all the structure together constitutes a single housing unit.
3. **New Building Construction:** New construction means the creation of an entirely new structure, whether or not the site on which it is built was previously occupied.
4. Reported permits on **residential buildings should only include** newly owned residential buildings, which includes all residential buildings **owned or partially owned by a private or private company or an individual** during the period of construction.
5. However, in a new building combining residential and nonresidential units (**mixed buildings**), even though the primary function of the entire building is for nonresidential purposes the permit **should be included** as the housing units in the mixed building are to be considered for the estimation of housing starts.
6. Reported permits **should not include** commercial buildings, institutional buildings, industrial buildings and other buildings which include all buildings other than residential, industrial, commercial and institutional buildings e.g. cattle sheds, passenger shelters etc.
7. Reported permits **should not include** demolitions, renovations and extensions of the existing building.
8. **Plinth Area:** It means, ground area covered by the building above the plinth level. In case the building has more than one floor, it means the **sum total of plinth areas of all the floors**.
9. **Number of Storey:** Number of Storey in building with ground floor only should be taken as one and it should be taken as 'two' if it has ground floor and first floor. It should be given in a similar manner for taller buildings. Barsati etc. on top floor construction may not be counted towards number of storey if covered area in is less than 25 percent of covered area on ground floor.
10. **Housing start:** Work is begun when the first physical operation, such as, site-operation, delivery of materials and equipment to the site, start of excavation or laying foundation etc. is done after planning and designing stages. All housing units in a multiple housing unit building are defined as being started when excavation for the building has begun. For eg: if a particular building permit contains 50 housing units and the excavation begins for the footing or foundation of that building then it will be considered as 50 housing starts

11. **Building Completed** (Work completed): A building on which work is completed and which is physically ready for occupation.

All permits pertaining to **new residential construction** issued during the *calendar years (January to December) 2003 and 2004* (total of eight quarters) should be collected through **Schedule Part I**. This listing could be used for the sample selection for the housing start survey.

**Sample selection procedure for the housing start survey (Schedule Part II)**

The sample selection will be based on a stratified sampling method in which the units in each stratum will be selected based on systematic random sampling method. In each administrative/tax zone/ward, the permits data can be further stratified based on type of the structure/building (Single housing unit (SHU) or Multiple housing unit (MHU)). (For eg. if a particular City have 5 zones. Then each zone should be further stratified into 2 strata. *i.e.* in total there will be 10 strata.) In each such stratum, a separate 5 per cent sample of the total building permits for new residential construction in that stratum should be selected separately based on systematic sampling procedure. *If the 5 per cent of the total happens to be fraction the next possible integer should be taken as the sample size. (For. eg. 5 per cent of 201 is 10.1 then sample size is 11). If total number of permits in a stratum is less than 10 then all permits are to be taken into the sample. If the 5 per cent of the total number of permits in a stratum happens to be a number less than 10 then the sample size is to be taken as 10.*

**Instructions for filling Schedule Part I**

| Question No:         | Instruction/Codes  |       |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
|----------------------|--|-------|-----------------|------|-----------|---------------------------|---|-----------|------------------|---|-----------|------------------|---|-----------|--------------------|---|---------|---------------|---|----------|-------------|---|
| [1] i), ii) and iii) | Name along with the Census Code must be given  |       |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| [1] iv)              | Civic Status and code of the city/town   |       |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| [1] v)               | <table border="1"> <thead> <tr> <th>Class</th> <th>Population size</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Class I</td> <td>Population 1 Lakh &amp; Above</td> <td>1</td> </tr> <tr> <td>Class II</td> <td>50,000 to 99,999</td> <td>2</td> </tr> <tr> <td>Class III</td> <td>20,000 to 49,999</td> <td>3</td> </tr> <tr> <td>Class IV</td> <td>10,000 to 19,999</td> <td>4</td> </tr> <tr> <td>Class V</td> <td>5,000 to 9999</td> <td>5</td> </tr> <tr> <td>Class VI</td> <td>Below 5,000</td> <td>6</td> </tr> </tbody> </table> | Class | Population size | Code | Class I   | Population 1 Lakh & Above | 1 | Class II  | 50,000 to 99,999 | 2 | Class III | 20,000 to 49,999 | 3 | Class IV  | 10,000 to 19,999   | 4 | Class V | 5,000 to 9999 | 5 | Class VI | Below 5,000 | 6 |
| Class                | Population size  | Code  |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Class I              | Population 1 Lakh & Above  | 1     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Class II             | 50,000 to 99,999   | 2     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Class III            | 20,000 to 49,999   | 3     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Class IV             | 10,000 to 19,999   | 4     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Class V              | 5,000 to 9999  | 5     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Class VI             | Below 5,000  | 6     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| [2] A                | <p><i>Fill separate sheets for each quarter</i></p> <table border="1"> <thead> <tr> <th>Class</th> <th>Population size</th> <th>Code</th> </tr> </thead> <tbody> <tr> <td>Quarter 1</td> <td>January - March</td> <td>1</td> </tr> <tr> <td>Quarter 2</td> <td>April - June</td> <td>2</td> </tr> <tr> <td>Quarter 3</td> <td>July- September</td> <td>3</td> </tr> <tr> <td>Quarter 4</td> <td>October - December</td> <td>4</td> </tr> </tbody> </table>   | Class | Population size | Code | Quarter 1 | January - March           | 1 | Quarter 2 | April - June     | 2 | Quarter 3 | July- September  | 3 | Quarter 4 | October - December | 4 |         |               |   |          |             |   |
| Class                | Population size  | Code  |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Quarter 1            | January - March  | 1     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Quarter 2            | April - June   | 2     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Quarter 3            | July- September  | 3     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| Quarter 4            | October - December   | 4     |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |
| [2] B Cl.2           | Administrative/Tax ward/zone of the building - This information for the pilot survey should be based on corporation or municipality  |       |                 |      |           |                           |   |           |                  |   |           |                  |   |           |                    |   |         |               |   |          |             |   |

|                                | <b>records.</b>   |  |      |                              |   |                                |   |
|--------------------------------|---|--|------|------------------------------|---|--------------------------------|---|
| [2] B Cl.4                     | Date should be in the format dd/mm/yyyy(for eg: 12th November 2007 should be 12/11/2007)  |  |      |                              |   |                                |   |
| [2] B Cl.9                     | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Code</th> </tr> </thead> <tbody> <tr> <td>Single housing unit building</td> <td style="text-align: center;">1</td> </tr> <tr> <td>Multiple housing unit building</td> <td style="text-align: center;">2</td> </tr> </tbody> </table> |  | Code | Single housing unit building | 1 | Multiple housing unit building | 2 |
|                                | Code  |  |      |                              |   |                                |   |
| Single housing unit building   | 1   |  |      |                              |   |                                |   |
| Multiple housing unit building | 2   |  |      |                              |   |                                |   |
| [2] B Cl.11                    | Number should not include basement but should include ground floor  |  |      |                              |   |                                |   |
| [2] B Cl.12                    | The plinth area should be given in <b>Sq.Ft.</b>  |  |      |                              |   |                                |   |
| [2] B Cl.13                    | The height should be in <b>Ft.</b>  |  |      |                              |   |                                |   |

**Instructions for filling *Schedule Part II***

| Question No:       | Instruction/Codes  |  |      |     |   |    |   |
|--------------------|--|--|------|-----|---|----|---|
| [1] and [2]        | Can be obtained from <i>Schedule Part I</i>  |  |      |     |   |    |   |
| [4] i), ii) (f)    | <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th></th> <th style="text-align: center;">Code</th> </tr> </thead> <tbody> <tr> <td>Yes</td> <td style="text-align: center;">1</td> </tr> <tr> <td>No</td> <td style="text-align: center;">2</td> </tr> </tbody> </table> |  | Code | Yes | 1 | No | 2 |
|                    | Code   |  |      |     |   |    |   |
| Yes                | 1  |  |      |     |   |    |   |
| No                 | 2  |  |      |     |   |    |   |
| [4]. ii) . (a),(e) | Dates should be in the format mm/yyyy (for eg: October 2005 should be 10/2005)   |  |      |     |   |    |   |
| [4]. ii) . (c)     | Number should not include basement but should include ground floor   |  |      |     |   |    |   |
| [4]. ii) . (d)     | The plinth area should be given in <b>Sq.Ft.</b>   |  |      |     |   |    |   |